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ABSTRACT

Nutrition education is the theme of this issue of "Children in the Tropics," which emphasizes an analysis of the situation of nutrition education programs, particularly in third world countries. It is noted that in most cases, it is necessary to integrate aspects of nutrition education into broader programs that encompass agricultural and food issues in biological, cultural, economic, social, and cognitive contexts. It is suggested that there is no reproducible model for nutrition education, but that local settings and populations must be the foundation on which nutrition programs are built. The nutrition education approach presented involves: (1) analyzing the situation--that is, determining nutritional status and food consumption, and finding out what determines dietary consumption and behavior; (2) engaging the participation of the population; and (3) developing programs, including identifying target groups, messages, channels of communication, evaluation, and personnel training. A project involving education about food and diet in a nursery school in West Africa is described. A technical note on an educational series on food designed for small children by the International Children's Centre is included. Appended is a grid to be used in the study of local environments and living conditions. (LB)

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CHILDREN IN THE TROPICS

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NUTRITION EDUCATION

1991 - N° 192

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INTERNATIONAL CHILDREN'S CENTRE – PARIS

The International Children's Centre was created by the French government in 1949, on the initiative of Professor Robert Debré in particular, following negociations between France and the United Nations. Its purpose was to furnish those international and national agencies dealing specifically with child care with training facilities and educational and informational tools in the field of child health and development, viewing children within their family and surroundings.

ICC soon turned essentially toward Third World children and devoted its activities to the training and education of personnel with social, educational and administrative responsabilities as well as medical and paramedical workers. The desire for greater efficiency has led it to work increasingly with trainers and to concentrate its efforts on the methodological and educational aspects of mother and child care programmes.

ICC is also engaged in an attempt to further study — and — action on some aspects of the life and health of children and their family, so as to contribute to practical improvement, particularly in the fields of growth, nutrition, planned parenthood, the control of transmissible and nutritional diseases, preschool and school education, the needs of disabled and underprivileged children, etc.

Over this period of more than 30 years, a large amount of documents on children and adolescents, mostly from the developing countries, has been accumulated. This international documentation has been classified and sorted out, and has been computerized since 1983 : a bibliographic data base (BIRD : « Base d'Informations Robert Debré ») may be consulted anywhere in the world, through international communications networks. ICC also publishes periodicals, educational documents and specialized bibliographic bulletins.

As for its legal status, the International Children's Centre is a foundation under french law of recognized public utility, administered by an executive board with broad international membership.

CHILDREN
IN THE TROPICS

REVIEW OF THE INTERNATIONAL CHILDREN'S CENTRE

NUTRITION EDUCATION

☐ MICHEL CHAULIAC
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1991 - N° 192

This issue presents an overview of the experience of an ICC team, following many years of work in the field of education for nutrition in developping and industrialized countries.

Over the past three years, the ICC has worked with European, African and Latin American research teams in rethinking the methodology and contents of education for nutrition programmes, and the results obtained. The objective was a better understanding of the limitations and an analysis of the difficulties and bottlenecks encountered, so as to modify strategies and magnify achievements.

We wish to thank all those people whose research or experience has contributed to shedding light on specific aspects of these problems, broadening our interprofessional approach and encouraging our own studies and action in this field.

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INTRODUCTION

Can people's collective eating habits be changed by education for nutrition? Can they at least be improved? Education for nutrition, a theme that is mentioned in many health programmes, does occasionally produce change, but rarely does it live up to what is expected of it.

Many officials are now convinced that education for nutrition does not simply mean delivering lectures aimed at transmitting scientific information more or less adapted to the local context, nor proposing rules for eating, in terms that are often doctrinal, and sometimes coercitive and authoritarian. Adults, like children, cannot be viewed as pure putty, on which a food policy can be imprinted. It is also clear that when individuals know more about food they do not necessarily modify their behaviour. Nor is education for nutrition a series of normative messages based on negative values such as the fear of having an undernourished child, or anxiety over becoming obese.

Education for nutrition should enable individuals of all ages to acquire the knowledge and skills pertaining to food and nutrition questions that are necessary for them to construct and develop - and perhaps even choose - their dietary behaviour with some degree of freedom, in the context of socioeconomic as well as cultural constraints.

An objective of this type implies that individuals are not only given the possibility of acquiring scientific notions with respect to diet and nutrition, but are also taught to analyse their food-related attitudes and behaviour, with the specific advantages and limitations of the setting in which they live. This situational diagnosis approach, which must be carried out by the community itself, with the help of professionals, should be a part of every education for nutrition programme, and lead to the adjustment of action to local situations.

The present discussion makes use of two concepts : attitude and behaviour. An attitude is a position, a way of viewing or an internal disposition adopted by any individual with respect to a situation ; this person is then able to observe and judge it instead of being dominated by it. Attitudes are built out of knowledge, beliefs, values and personal predisposition. Behaviour is another phase, since it is evidenced by an observable act and results in a certain way of acting, produced in response to environmental stimuli, but it is always reactional.

A third concept that should be taken into consideration may be designated as eating conduct, which is essentially dynamic : the individual anticipates environmental sollicitations and acts, taking a preventive, prospective position. There is no doubt that eating conduct will express itself differently and to varying extents depending on living conditions and dietary resources. These notions of attitude, behaviour and conduct correspond to different

degrees of information, awareness and participation, which are reached by individuals and groups in the course of educational programmes. Societal pressure on individual and collective behaviour through education is not a negligeable factor, and the mass media make use of this dynamic force to transmit all kinds of messages.

While the analysis of conduct and dietary resources may be seen as primordial in any education for nutrition programme, more attention and investigation should be given to the phase which might be called "negotiation". This practice, originally used in diplomacy, is a part of the strategy of many other disciplines, but often with one added difficulty : the two parties involved do not meet on equal footing. This is the case of the health professional faced with community leaders, or with the hierarchy of the agency for which he or she works. Popular participation is presently a fashionable approach, but it means that people must be ready to take risks, be aware of the choices to be made, of what is achievable and what is beyond access, of what is necessary and what possible, of personal and collective interests, of what deserves top priority and what is secondary for the administration, the population and professionals.

Through this issue devoted to an analysis of the situation of nutrition education programmes, the ICC team wishes to underline some most important points. First, the fact that in most cases it seems necessary to integrate aspects of nutrition education in broader programmes encompassing agricultural and food questions, leaving out no facet of this multidimensional approach, be it biological, cultural, economic, social or cognitive. Next, even if the strategy remains the same, there is no reproducible model for nutrition education, no miracle receipt : it seems essential that the local setting, the identified needs and the expressed desires of population groups be used as the foundations on which to build, in conjunction with them, programmes which will then respect their cultural identity, one part of which is expressed through their dietary behaviour. These educational actions are of long duration ; they must be repetitive but varied, both in their form and in their tools or language. Last, they must rest on solidly proven scientific information, while accepting the changes in this science of diet.

NUTRITION EDUCATION

Nourishment is essential for people's survival, both as individuals and collectively, but eating is much more than a simple question of satisfying biological needs. This is amply proved by the extreme diversity of means employed by different groups to obtain a satisfactory diet. The types of food produced and consumed, the way food is prepared, the codes and symbols surrounding food, the patterns of conviviality and of communication through food and eating, collective and individual tastes, and the factors guiding dietary choices in general, are all indicative of much more than an attempt to achieve a balanced nutritional intake.

Let us examine the term "nutrition education".

Nutrition

Nutrition is the overall process by which the body transforms and assimilates food. When employed as an adjective, "nutrition" mainly refers to the biological component in nutriture, and to the idea of the satisfaction of physiological needs. The use of this term explains why this activity is considered so important in the health sector : this is corroborated by the programmes developed around the world, and tends to conceal the other dimensions involved in eating.

Education

Education is "the act or process of providing knowledge, skill and desirable qualities" (1). Education provides individuals with elements that they may use for their ongoing adjustment to their environment. Parents educate their children as they raise them : they pass on knowledge, but also the norms, codes, values and habits specific of the social group to which they belong. The way one eats is an important part of this. Education is far more than simple instruction, which involves the transmission of skills or of information in order to keep individuals or groups informed of discoveries or events. Nutrition education aims at providing groups and individuals with the ability to choose the means of satisfying their physiological needs for survival, growth, physical activity and reproduction within their particular environment.

Educating a child is a long process, involving the participation of many members of the community, and especially of parents, in the course of everyday activities. This points to one of the major contradictions of nutrition education programmes, which are generally planned to run for short periods - two to three years - because of the type of financing employed, and are therefore incompatible with the very foundations of education. This is even more true for adults, who are less apt to assimilate new knowledge, and consistently interpret it in terms of what they already know and of their usual behaviour.

(1) Webster's New International Dictionary, 1981.

Nutrition education

... or education for nutrition

A useful distinction may be made between nutrition education and education for nutrition. Nutrition education tends to refer to an all-encompassing educational concept in which individuals are active participants who acquire knowledge and develop attitudes and behaviour through their own reflexion, with guidance from educators. This type of action implies a long span of time. Education for nutrition refers to the idea of instruction, in which messages are conceived and transmitted to a target public which is supposed to put them into practice ; it is a short-term intervention.

This difference should not result in the rejection of either of these types of action. They may be quite complementary : for instance, children may be given nutrition education, with the participation of parents who are given education for nutrition in order to limit the risk of discordance between the knowledge and attitudes of parents and children within the family.

Can nutrition education be confined to a limited sphere? To enable their body to function, human beings eat food. They are omnivorous : that is, they can and must vary their diet. This gives them strength and freedom, but is also a constraint. Foods are eaten following preparation, using a variety of receipts, depending on the occasion. People derive their food from a number of sources depending on what is available locally, their personal resources, their reference values and knowledge. They are influenced by many things. The food available depends on the ecological situation, agricultural policies, what is produced for human consumption, local and regional trade, and the country's situation with respect to the international market.

The broad range of biological, cultural, social and economic factors and of nutritional and policy-related risks influencing diet shows that the objectives, targets and techniques of nutrition education cannot be defined offhand, but must be the outcome of an in-depth analysis of the situation. Personnel in charge of nutrition education are often pessimistic, claiming that families and individuals are loath to change their habits or to follow the advice they are given. These reactions result in a negative attitude, and an actual abatement of interest in nutrition education. It seems preferable to ask oneself why such rejection occurs, before jumping to conclusions.

History of food and diet

History shows the existence of dietary trends within all cultures, on all continents, probably following changes that are viewed as worthwhile, and then perceived, integrated and seen by people as the product of an urge, a necessity or an obligation. The same is true of the means of production, storage techniques, food-processing methods, and ways of cooking. The discovery of the American continent toward the 15th century produced a major worldwide upheaval in dietary patterns : potatoes, manioc, maize and tomatoes seduced the producers and consumers of Europe, Africa and Asia. More recently soybeans have massively invaded the United States, rice has become a food staple everywhere ; stock cubes may be found even in the most isolated parts of

Sahelian Africa. The worldwide success of certain soft drinks, and the popularity of exotic fruit on the European markets are well known facts. People clearly are capable of accepting some dietary and culinary changes. What should be called into question, then : nutrition education as such, the specific programmes developed, the "experts", or the population?

Popular knowledge with respect to diet has been built up gradually since the beginnings of humanity, with the progressive mastery of a multitude of techniques ; scientific knowledge on food and diet is more recent, and dates back to the research of 18th century chemists. This knowledge is being refined as research techniques are improved. It has revealed the extent of pathological conditions induced by inappropriate dietary consumption, and has led public health officials to investigate the dietary models of population groups, and to document the close interrelations between farming and animal husbandry, trade, income, social status, dietary consumption, health status and nutritional status. These studies have pointed to the role played by nutrition education. And yet, history also shows that messages that are "scientifically correct" at a given time may be erroneous several years later. In the 1960's, emphasis was placed on the importance, for poor people, of a sufficiently protein-rich diet, whereas today's priority is energy. In the 1970's French people were told to eat less bread, whereas the opposite was advised in the 1980's. In Western countries today, some scientists contend that the contribution of lipids to the overall caloric intake should be restricted ; others would confine this recommendation to at-risk individuals. Like popular knowledge, then, scientific knowledge changes and even contradicts itself.

NUTRITION EDUCATION PROGRAMMES : SOME THOUGHTS

Limits

to training ...

The difficulties of nutrition education must also be analysed with respect to its status, both on the national and on the local levels. The health and nutrition education section is often a division of the national mother and child health department, with very little personnel and a restricted budget. In many developing countries, the money devoted to health and nutrition education only represents 0.01 % of the health budget which in turn is quite impoverished (2). These resources are even more insufficient at the regional level. Quite often, then, workers must resort to the use of educational material produced elsewhere and for other people. Where evaluation is concerned, once reports have been handed up from the local level to the national level, and when nutrition education is mentioned at all, they only offer a quantitative view of the number of talks and demonstrations delivered, and the number of individuals reached, but there is no information on the quality and impact of the activity. Little is done during supervisory visits to valorize and evaluate nutrition education. Most often, the supervisor has neither experience nor theoretical background in education, and cannot help in providing additional training for field workers, and routine therefore sets in, to the detriment of efficiency. The basic training of health personnel (physicians, nurses, midwives) scarcely mentions the theoretical aspects, and even less the practical ones, involved in the implementation of nutrition education programmes.

financial

psychological

A better comprehension of the difficulties encountered in nutrition education activities requires an analysis of the respective expectations of families and of personnel. For instance : a mother consults for some symptoms shown by her child. She hopes the child will be cured, or relieved, usually through a definite, specific medical act such as a prescription or an injection. Where nutrition is involved, however, the first thing that is demanded of the mother is that she acknowledge the existence of malnutrition and its causes : that is, that she become aware of the fact that the way she feeds her child is inappropriate. Although she is doing her best to feed her family, she is told that her behaviour is inadequate. How can she accept this first message? After this, she is repeatedly given advice but does not receive any medication or prescription, only proposals for action, to be taken by herself, all alone. This is not easily acceptable for a woman who already shoulders the many tasks incumbant on her as wife, mother and producer, and who has limited resources to do so. Even if the mother does want to follow this advice, will she be able to do so if she must first persuade her husband and the other women in the family, and circumvent the traditional ways of preparing and sha-

(2) R.K. MANOFF, Social marketing and nutritional education : A pilot project in Indonesia, Cahiers de l'Enfance, 1984 ; 65-68 : 107-127.

ring food? Is it surprising, then, that these nutrition education sessions, with their talks or even their demonstrations and dialogue, do not yield any positive results?

Have the needs and demands, the constraints and resources of families been analysed and taken into consideration? Have the capabilities and aspirations of the personnel been studied and is their training appropriate? Do workers who attempt to find new solutions receive support? These are only a few of the difficulties encountered by nutrition education plans.

Litle publicity is given to the outcome of nutrition education programmes and to their analysis, and this limits the ability to take advantage of other people's experience. Most often these documents only present the views of the experts, overlooking those of the people most directly concerned. Some overviews do exist, nonetheless, (3) (4) (5) (6) (7) (8) (9) and should be helpful for the conception of new, more relevant projects.

Criticism is aimed at the strategies implemented as well as at the contents and the methods used. In most cases, nutrition education interventions are part of health and nutrition projects planned and implemented by health officials. Because of their own background, the latter tend to orient programmes toward a medical model, and to use inappropriate communication techniques. The objectives are derived from an analysis of needs as they are perceived by the health sector only. The outcome is an attempt to transmit knowledge aimed at combating certain practices which are judged harmful, to inculcate rational scientific conceptions pertaining to nutrients, the nutritional value of food, requirements and the identification of signs of severe malnutrition, and to concentrate attention on the curing of existing symptoms rather than on the prevention of the causes. These projects are more concerned with sick individuals than with the nutrition and diet of healthy people. A sort of universal educational package is handed out unchanged in forest-covered Africa and in the Sahel, in Asia and in America, from the Andes to Amazonia.

strategic

(3) A. PRAUN, Nutrition education : Development or alienation? Human nutrition : Applied nutrition 1982 ; 36 A : 28-34.

(4) B. SCHURCH, L. WILQUIN, L'éducation nutritionnelle dans les communautés du Tiers Monde. Annotated bibliography, Fondation Nestlé, 1982 ; 208 p.

(5) M.S. ZEITLIN, CS Formacion, Nutrition intervention in developing countries. Study II. Nutrition education. Oelgeschlager, Gunn and Hain, Cambridge, March 1981.

(6) F.E. WHITEHEAD, Nutrition education research. World review of nutrition and dietetics, 1973 ; 17 : 91-149.

(7) D.R. GWATKIN, Nutrition education : an overview of the issues. Food and nutrition bulletin, 1987 ; 7 : 55-58.

(8) J.D. GUSSOW, I. CONTENTO, Nutrition in a changing world. World review of nutrition and dietetics, 1984 ; 44 : 1-56.

(9) M.T. CERQUEIRA, Recent approaches to nutrition education in developing countries. FAO, Food policy and nutrition division, Nutrition education workshop, 3-5 dec. 1990 (in preparation).

of cultural understanding

Not only are these programmes inappropriate, they occasionally convey erroneous ideas about how people behave. For instance, they advise avoiding sudden weaning when weaning is actually done gradually, introducing complemental feeding at an earlier age, whereas the opposite is preferable, given the local children's nutritional status and environment, they recommend an increased intake of animal proteins, where the plant protein ration seems to be sufficient, etc... They aim at using workers with little training in nutrition to teach the classification of foods in 3, 4 or 7 groups, but this is meaningless for the target public. These messages, based on the western rational, scientific model, reject the specific cultural values of other groups considered to be ignorant. The latter are viewed as "receivers" ; that is, as passive beings relegated to the role of listening to a lesson and then putting it into practice.

This nutrition education is dispensed by health workers, and takes place in the health centre which, in many countries, is attended spottily, rarely by those families in greatest need and usually only in case of illness. The self-selected public is composed of mothers who attend a number of nutrition education sessions but do not receive support at home. There are some evaluations of short-term knowledge, but aside from them the outcome is not analysed in terms of behaviour modifications, nutritional status or morbidity and mortality.

Over the past decade or so, with the increasing awareness of the role of communication, a number of projects have made use of innovative approaches involving a broader use of the mass media. A number of culturally acceptable messages are selected, after which they are broadcast on the radio or television. The cost of these campaigns is high, and little is known of their long-term impact. They are still initiated by "experts" in nutrition, and there is no popular participation.

Some projects have applied a social marketing approach derived from commercial marketing methods : the most outstanding of these was developed in Indonesia. On the basis of an analysis of the situation and of the priorities, specific groups were selected, messages were developed and tested by the people in charge of the project ; they were broadcast by communication channels appropriate to the transmission of these messages, and by specially trained field workers. These quantitative and qualitative research techniques are useful in determining the needs and demands of the population, and in obtaining greater involvement of field workers specialized in nutrition and in communication : at the end of five or six years, the outcome was positive, with respect to both dietary behaviour and the improvement of nutritional status. When human, financial and material resources are sufficient, and serve a definite purpose, specific objectives, redefined as the programme moves from one phase to another, may be achieved through nutrition education. However, the cost of this type of approach far exceeds the resources generally available in

developing countries. The question of whether the effects obtained are lasting requires investigation.

More rarely, programmes make use of the educational or agricultural sectors. Those aimed at schoolchildren have never really been evaluated, and run the risk of causing internal conflicts between what children learn at school and family practices. Further, teachers rarely receive sufficient training, and the programmes generally take the form of an addition to the curriculum. This produces an excessive work load for both children and teachers, particularly since there is little teaching material available and the existing material is often inappropriate to the great variety of social contexts, owing to the long, difficult process involved in the development of this material.

Some general conclusions may be drawn from these remarks :

- community participation in the elaboration, follow-up and evaluation of programmes seems to be an absolute necessity if positive, lasting results are to be achieved ;

- where education is concerned, limited projects that do not provide continuity of action should be avoided ;

- any purely scientific, medical approach should be rejected. Through community participation the aspirations, constraints and problems of population groups may be taken into consideration, along with the cultural aspects of diet. This enables people in charge of programmes to respect the pace of the community ;

- the adjustment of objectives and of means to local demands and aspirations precludes the implementation of rigid national programmes. The latter should provide any support needed, and leave room for the flexibility required by specific local characteristics ;

- work on means of communication and on teaching methods is essential. Limited experiments must be conducted before any broader application of programmes ;

- the training and supervision of field workers in charge of daily contact with communities is an essential aspect of programmes ;

- in itself, the improvement of knowledge does not produce a significant impact on the behaviour and health of families. In defining their objectives, programmes should take this into account, and be more ambitious ;

- in many projects, monitoring of children's growth is viewed as a major tool furthering dialogue and evaluation at the individual, family and community levels. This presupposes adequate training of workers and possibly of members of the community.

THE NUTRITION EDUCATION APPROACH

Criticism of nutrition education projects points to their extremely limited impact, regardless of the resources invested, if the population does not participate in them. The current tendency, accepted but somewhat questionable, bases the formulation of nutrition education programmes on the approach used in public health, or more specifically in community health. The main goal is the analysis of the similarities and differences between the population's needs, the demands it is capable of expressing, and the responses developed so far. Needs are uncovered by nutrition experts, or even better, by specialists working at the grassroots level. Demands are simply those needs that are perceived and expressed by the population itself. The responses are provided by the services, in order to improve the health status, educational level, means of production and resources of families. Figure 1 illustrates this approach.

The objective is to achieve the greatest possible coincidence between these three spheres. As a rule, activities are developed on the basis of available services with no heed to needs, not to speak of demands. It is a fact that demands are rarely formulated and even more exceptionally specified in the case of nutrition education. It would seem essential, then, to aim at having the population become aware of needs, so as to elicit a demand on which a project may then be based.

Once these preliminaries are respected, the overall approach to nutrition education is much the same as for public health, with adjustments appropriate to its educational purpose (table 1).

Table 1 :

PHASES OF THE PUBLIC HEALTH APPROACH

Analysis of the situation • Identification of needs and demands • Establishment of priorities
Setting objectives, defining criteria for evaluation • Definition of target groups • Choice of activities
Defining resources • Distribution of responsibilities
Elaboration of tools (especially for communication) • Testing of tools • Implementation of activities
Evaluation of the process and of achievements

Ibid. (10)

As J.P. DESCHAMPS points out, this model is open to criticism, since there is usually a contradiction between the proposals of high-level officials capable of drawing up streamlined programmes and the reality faced by technicians when they attempt to put these into practice in the field. Local constraints force them to make compromises in applying the theoretical programme. This fact should not serve as an alibi for not defining objectives and a strategy, however. Rather, as M. GOLDBERG (quoted by J.P. DESCHAMPS) says, "the reason why there is a consensus relative to this model among public health specialists is precisely because it has never been put into practice, nor was it intended to be. It is a tool, from which one must take one's distances in practice but which should be kept in mind as a frame of reference. In other words, like Aesop's tongue, it is the best of things if handled with flexibility, and the worst thing if applied too literally." (10).

ANALYSIS OF THE SITUATION

The following is a presentation of the many analytic tools potentially utilisable to achieve a sufficiently accurate diagnosis of the situation, so as to develop programmes that are truly adapted to the living conditions of the target population.

This is a crucial phase, since it yields results that may be used to define objectives and suggest a strategy. In education as in every other programme, it is important to clearly determine what results are sought, otherwise, as Mager (11) says, "if you are not sure of where you want to go, you may end up elsewhere... and not even know it".

Experience shows that the active participation of communities in the process of analysing the situation is one way for them to gain awareness and understanding, and is the best guarantee of success. Too often, the analysis is superficial or only yields information of a general, solely quantitative nature which is of no help in defining objectives in behavioural terms.

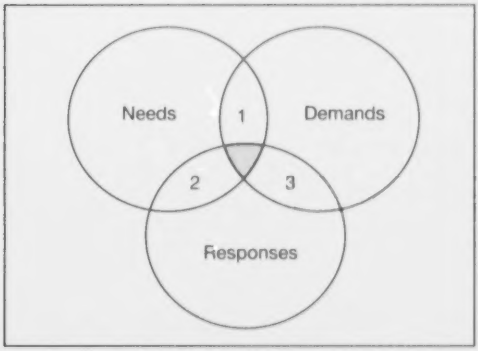

Figure 1 : The convergence of needs, demands and responses.
1 : existing needs, demands expressed, no response.
2 : existing needs, responses proposed but no demand expressed.
3 : demands expressed, responses provided but no real need.
The three rarely converge (shaded area).

The initial data furnish a point of departure for subsequent long-term follow-up and evaluation of the programme's impact. Such analysis of the situation must be on-going and dynamic, and it is by no means enough to obtain information at one given point in time. Each action affects the situation, which then changes. Evaluation must be permanent, so as to adjust the strategy, resources and tools to this movement. This process is made possible by listening to and talking with the population.

(10) J.P. DESCHAMPS, De l'intuition à la programmation : la démarche en santé publique. In : L'école par le menu : Méthodes et pratiques en éducation nutritionnelle, E.N.S.P., Rennes, 1989 ; 211-219.

(11) R.F. MAGER, Comment définir les objectifs pédagogiques, Bordas, Paris, 1977 ; 131 p.

Before collecting information, the question of the appropriateness of each piece of data, and of the use to which it will be put must be raised. Rather than launching a survey involving a great many questions that are difficult to analyse, it is preferable to retain those that seem most relevant and suitable for the development of operational proposals. Often enough information may be obtained by simply observing the environment. Why ask people what material is used as roofing on their house, for instance, when the immense majority of houses are clearly covered with corrugated iron? Conversely, it may be useful to ask people where they get their drinking water when digestive infections are prevalent, and if possible sources include the river, a well and rainwater.

Although the themes and methods of analysis proposed here are not exhaustive, they do represent an ideal spectrum : the objectives and locally available resources will determine choices among them. In addition to obtaining overall information on the living conditions and community organization (cf Appendix 1), an effort will be made to answer some essential, more specific questions on the food available, dietary habits and behaviour of various subgroups of the population. The questions deal with :

- consumption (foods eaten, amounts, rhythm, place, etc...) ;

- nutritional status of different groups ;

- foods available at different times of year ;

- cost and origin of food eaten (purchased, gift, home production) ;

- destination of food produced by the family (sale, gifts, storage, processing, home consumption) ;

- means of information and communication that are accessible and are comprehensible by the population ;

- specific customs pertaining to different times of life (childhood, pregnancy, breastfeeding...) ;

- needs felt and expressed by the population with respect to food, and constraints encountered.

DETERMINING NUTRITIONAL STATUS

Why ?

If a population's "objective" needs with respect to nutrition are to be analysed, it is important to have as accurate as possible a picture of the main problems encountered. The evaluation of nutritional status yields information on the types of nutritional deficiencies, their severity, their frequency in the specific population and in its subgroups, and also makes possible the quantitative analysis of the influence of various factors on their occurrence : biological factors (age, sex) pathology (infections, parasitoses...), environment (altitude, type of habitat, season...), socioeconomic factors (family structure, religion, ethnic group, income, means of production, educational level). Conversely, a positive approach may very well be adopted, with the investigation of those factors associated with satisfactory nutritional status, so as to define some favourable elements.

How ?

Analysis of a situation never starts from nought. Every study may be guided by experience derived from work in neighbouring regions, or with other groups with similar living conditions. Empirical observation by health workers in hospitals or health centres, during home visits and even in the streets, helps to flesh out intuitions and to guide investigations, as does the analysis of hospital records.

In underprivileged populations, special attention is given to the analysis of nutritional deficiencies, especially within the most vulnerable groups, which include children from birth to ages three to five years and pregnant women. Occasionally observation commands the inclusion of other groups such as lactating women, women of childbearing age, school-age children, adolescents, or even adult men and menopaused women. The first thing to study is protein-energy malnutrition (without overlooking the lipid aspect) and nutritional anaemia, which is highly prevalent ; next, vitamin A or iodine deficiency will be suspected when there are some presenting problems such as cases of xerophthalmia or of goitre. More rarely, it may be necessary to look into deficiency in vitamin C, thiamin (vitamin B1), riboflavin (vitamin B2), niacin, vitamin D or fluoride.

In populations whose living conditions are different, problems linked with overeating should receive foremost attention. These include obesity, hyperlipidaemia, non-insulin-dependent diabetes, atherosclerosis, cardiovascular diseases and even high blood pressure. In this case, adults are the target, but since the consequences of these conditions are essentially felt in the long term, their onset in children should also be watched for.

These quantitative studies may either be conducted with the help of cross-sectional epidemiological surveys, or through analysis of data correctly collected by health centres. The respective value of these has been discussed in "Children in the Tropics", especially in issue 181/182 which deals with the interpretation of various nutrition indicators. Information may also be found in issues 149/150, 151,159, 165, 175/176 and 186.

Findings

This type of analysis determines those population groups that run the highest risk of developing one type of malnutrition or another (age group, gender, geographic location). Although it points to some factors linked to these conditions, it does not yield an understanding of the exact causes which are connected with dietary consumption or psychosocial and/or cultural factors, nor does it tell us what messages to transmit, or which means of communication should be used.

Some examples

A survey was conducted in southern Benin (12) on a representative sample of the population, to determine the prevalence of anaemia and the contribution of iron deficiency to its aetiology. The findings (table 2) showed that the most anaemic groups were,

(12) S. HERCBERG, M. CHAULIAC, P. GALAN et al. Prevalence of iron deficiency and iron deficiency anaemia in Benin. Public Health, 1988 ; 102 : 73-83.

in decreasing order : children aged 6 to 24 months, between 2 and 6 years, 6 and 14 years, menstruating women, menopaused women and last, adult men. There was no difference in prevalence of anaemia between urban and rural areas, except in 6-14 year-olds, who were more often affected in rural areas. 52% of anaemic individuals showed biological signs of iron deficiency, which was seen to be the main cause of anaemia.

Table 2 :

PREVALENCE OF ANAEMIA AND OF IRON DEFICIENCY WITH RESPECT TO AGE AND GENDER IN URBAN (UA) AND RURAL (RA) SOUTHERN BENIN

Groups	Anaemia (%)		Iron deficiency (%)	
	UA	RA	UA	RA
6-24 months	79	75	66	60
2-6 years	52	44	34	27
6-14 years	44	59	20	33
menstruating women	39	42	33	35
menopaused women	36	34	18	23
adult men	15	18	9	14

Ibid. (12)

In Ecuador, a national survey on the dietary, nutrition and health situation of children under 5 (13) showed the prevalence of acute, chronic and overall malnutrition in groups living in various geographic areas of this country, which borders the Pacific ocean and contains mountain peaks culminating at over 18,000 feet in the Andes. The findings (Table 3) show that the prevalence of chronic malnutrition is higher in the mountainous part of the country, whereas acute malnutrition is more frequent in coastal areas. The sparsely populated mountainous region has the highest rates for chronic malnutrition and overall malnutrition, followed by the sparcely populated coastal area, the densely populated mountainous area and the densely populated coastal area. Conversely, high figures for acute malnutrition are only seen on the coast, and then mostly in its sparsely populated parts. In this study the index of malnutrition was defined using MORA's method (14).

(13) W. FREIRE, H. DIRREN, J.O. MORA et al. Diagnostico de la situación alimentaria nutricional y de salud de la población ecuatoriana menor de cinco anõs, Consejo Nacional de Desarrollo (CONADE) y Ministerio Salud Pública, Quito, 1988 ; 268 p.

(14) Based on : J.O. MORA et al. A new method for estimating a standardized prevalence of child malnutrition from anthropometric indications. Bull. of WHO, 1989 ; 67 : 133-142.

Table 3 :

GEOGRAPHIC DISTRIBUTION OF PREVALENCE OF DIFFERENT TYPES OF MALNUTRITION IN CHILDREN UNDER 5 YEARS IN ECUADOR

Region/ habitat	Malnutrition %		
	Chronic/ height for age	Acute/weight for height	Overall/weight for age
Mountainous/ dense	43.5	—	32.9
Mountainous/ sparse	66.6	—	49
Mountainous	56.5	—	40.9
Coastal/dense	37.3	4	28.6
Coastal/sparse	47.3	9.9	40.9
Coastal	39.9	7	32.2
Whole country	49.4	4	37.5

Ibid. (13)

The combined analysis of data on infectious diseases and on malnutrition clearly points to the close relationship between these two factors within this population. This fact is extremely important for the orientation of nutrition and health education activities.

The value of monitoring individual weight growth, using a chart, and of interpreting the curve with each mother, taking into account the different individual and family factors which may affect the child's nutritional status has been repeatedly demonstrated in many contexts. This enhances individual involvement and awareness of the relations between nutrition, diet and health, and motivates families to improve their dietary situation, encourages the expression of demands and furthers the emergence of innovative solutions which may be adopted by other families and thus influence the overall situation in the community. The limits of this approach lie essentially in a lack of understanding by the personnel of the importance of this tool as an instrument for analysing the individual and family situation, and as a means of communication with mothers. This depends on the initial training of health personnel and on the quality of their supervision. Another limit stems from the fact that health centres are frequently under-attended, particularly by those families which could derive the greatest benefits from them.

In small communities, data for each child in the community may be copied onto an overall chart ; this is helpful in interaction with families. In a major project conducted in Indonesia in the early 1980's, this type of approach was used as the first phase in

analysis of the situation by communities themselves, and collective investigation of solutions.

DETERMINING FOOD CONSUMPTION

Why ?

The immediate cause of malnutrition is an imbalance between nutritional requirements and intakes. Within a population, an estimation of the main foods eaten and of the nutrients provided by them is necessary in order to evaluate the extent of deficiencies or excesses, and to identify any nutrition problems. Seasonal factors must be taken into account, along with fluctuations caused by the family's finances, for people living in a money economy.

How ?

The accuracy of data depends on the methods used. These range from the simple observation of what foods are sold on the markets to more sophisticated techniques such as the weighing of the daily menu of each member of families selected from a representative sample of the population. Simple observation yields an overall description of the type of diet - that is, of the main sources of food : cereal grains, tubers, fats, animal products, fruit and vegetables. In the national food availability reports published by the FAO, the basic data are somewhat imprecise and cannot be broken down according to broad geographic areas, and even less by local administrative units. Specific surveys may concentrate on the food purchased by households. These generally require that the families in the sample be able to read and write, and are of little value when self-sufficiency or eating outside of the home is prevalent. Like reports of food availability, these surveys do not yield information on actual consumption at the family and individual levels.

Various interview methods may also be used ; these include 24-hour recall, which involves questioning on what was eaten by the family or, better still, by each individual, on the previous day. The investigator uses the dietary history in an attempt to determine "usual" qualitative and quantitative consumption in collaboration with each individual (or, in the case of children, with the person in charge of them). There are many versions of these retrospective analysis techniques (that is, pertaining to the past). All rely on memory and on the relationship between the questioner and the interviewee, since the latter can always conceal his or her actual diet, intentionally or unintentionally. More realistic quantitative data may be obtained by weighing the food prepared and what is left on plates. However, this apparently more objective technique presupposes the presence of the investigator at mealtimes, and this in itself may be enough to modify actual behaviour. Furthermore, when many snacks are eaten outside of the home, this type of study is extremely complicated.

There is no ideal method for studying dietary consumption. Survey techniques must be determined in accordance with the objective assigned to the study. For instance, when the aim is the development of a nutrition education programme in a country with great ecological diversity, data on the average national consumption will hardly yield any valuable information. If meals served at celebra-

tions are eliminated, certain cultural features will be overlooked. Asking a mother about the diet of her school-age children neglects all of the food nibbled by children outside of the home.

Findings

Irrespective of the type of analysis, the findings are represented in the form of amounts of food eaten ; these may be converted into amounts of nutrients ingested, following use of tables of food composition, and compared with requirements. These tables are often imprecise, however. Furthermore, when broken down for subgroups of the population, the data become difficult to interpret (15). On the other hand, these studies do yield an accurate idea of the number of meals eaten daily and of their distribution, which information is most valuable when the objective is nutrition education. In this type of survey, it is useful to ask families where the food eaten comes from : home production, gifts, purchases. It is important to determine and to understand the origin of gifts (family, neighbours...), as well as the source and the quality of purchased food : raw food purchased on the market and prepared at home, prepared food purchased on the street, eaten in eating places or restaurants.

For an economic analysis, the influence of fluctuations in food prices on the purchasing behaviour of families is of particular importance in those areas where purchased food constitutes most of the diet. The influence of these fluctuations may be measured by "price-elasticity", which is the way the amount of food purchased varies with changes in its price. It may be useful to determine "income-elasticity", which is the way the amount of food purchased varies with changes in income, so as to predict the impact of modifications in monetary resources.

Some examples

In the framework of a national survey conducted in Colombia in 1981 (16), a subgroup of the sample was analysed to show regional variations in dietary consumption and nutrient intake, using a 24-hour recall technique. The findings (table 4) showed that the items most frequently eaten were, in decreasing order : onions, rice, potatoes, beef, oil, milk, bananas, plantain bananas, panela, tomatoes and sugar, with regional variations. Rice is the main source of calories, followed by plantain bananas and potatoes. Beef, rice and milk are the main sources of protein. Satisfaction of protein, calcium and vitamin A requirements was generally better in urban areas than in rural ones. Much food is purchased ready-made, especially in cities.

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(15) For a more thorough discussion of the advantages and limits of various types of consumption surveys, the reader is referred to P. GALAN, S. HERCBERG, Les enquêtes alimentaires : utilisation dans les études épidémiologiques à visée nutritionnelle. In : S. HERCBERG, H. DUPIN, L. PAPOZ, P. GALAN, Nutrition et Santé Publique, Documentation Lavoisier, Paris, 1985 ; 157-175.

(16) In : M.E. ROMERO, Feeding practices in Colombia, Analysis of a National Household Survey, Wld. Rev. Nutr. Diet., 1988 ; 41-57.

Table 4 :

AVERAGE CONSUMPTION OF CALORIES AND NUTRIENTS - LEVELS OF ADEQUACY PER REGION AND AREA : COLOMBIA, 1981

Region/area	Proteins	Calories	Calcium	Vitamin A
Atlantic	113	106	50	57
Eastern	101	94	56	42
Bogota	104	92	59	61
Central	104	98	51	48
Pacific	101	102	45	62
Total	104	98	52	53
Urban	107	98	55	57
Rural	99	99	46	45

Ibid. (16)

On the basis of a national survey of the budget and consumption of Tunisian households in 1975, PERISSE and KAMOUN (17) note that "in each income category, even in the lowest classes, some households fulfill their minimum requirements (for energy), whereas others show a deficit (...). The probability of being deficient increases as income declines. Within a same income category, it should be noted that the consumption patterns of households with a deficit are very much the same as those of no-deficit households, whereas the cost of the calorie is higher for the former than for the latter." In conclusion, they suggest an intervention aimed at the economy rather than educational action, although this would in fact seem to involve nutrition education for decision-makers. "One solution (...) might be the improvement of food distribution circuits, so as to attenuate differences in prices, which penalize deficient households. If the latter were given an opportunity to buy food at the same prices as the no-deficit households, it is probable that most of the problem would be solved."

On the whole, this information on nutritional status and dietary consumption, usually obtained from the work of health personnel, only yields basic quantitative data that serves to orient nutrition education.

(17) J. PERISSE, A. KAMOUN. Le prix de la satiété : étude de la consommation et du budget des ménages Tunisiens. Alimentation et nutrition, FAO, 1981 ; 7 : 3-12.

FINDING OUT WHAT DETERMINES DIETARY CONSUMPTION AND BEHAVIOUR

Why ?

Nutrition and dietary practices are complex, changing processes ; their reality, at any point in time, is the outcome of the adjustment of each society, family and individual to the specific environment, through the course of a history of several thousand years. In a nutrition education programme, then, the identification of target groups, the creation of "messages" and the development of communication tools also requires prior understanding of the factors determining dietary consumption and behaviour. Such analysis is based on qualitative research done by specialists in the social sciences, and which yields answers about the "why" of observable dietary behaviour and consumption.

Dietary consumption is the outcome of numerous factors, the interaction of which guides food choices. Figure 2 illustrates the main variables to be considered.

There is no such thing as an "ignorant" population where food is concerned. Each society, each culture has gradually elaborated its own views about food in the course of its history, in accordance with its environment : such conceptions are different from scientific knowledge. Too often health workers ignore or reject these popular views; this then makes it so difficult for individuals to understand scientific messages and to adjust to them that the chances are great that they will intuitively reject them. For this reason, nutrition education programmes should take traditional conceptions into consideration, and should not confront them directly. Let us take an example. Would a European nutritionist imagine advising people to eat insects or dog meat? No : and why not? First, these foods are "taboo" in these societies, and secondly, there are many products in the traditional European diet that may replace these, and that provide the same nutrients.

Value systems

It is probably useful to briefly clarify the meaning of some terms. Let us take the word "value". Every society has developed a system of values that is passed on to children during the first years of life. Each individual, then, defines him or herself with respect to the norms laid down by the reference society, and is then recognized as a member of the group. These value systems leave some margin for individual differences. The value ascribed to hospitality, generosity or prestige, for instance, corresponds to a given type of behaviour with respect to eating : the guest is given some dishes that are viewed as refined, some types of food are given as gifts, others not, people attempt to improve their prestige through festivities in which eating plays a major role. In certain cultural groups, frugality is associated with purity. It is important, then, to be familiar with these connotations, so as to respect certain foods to which important values are attached, and to avoid promoting others that are culturally rejected.

On one Philippean island, for instance, the local culture classifies food according to the satisfaction it procures (18). The food that

(18) J.M.P. EDEMA. Social phenomena and the planning of a nutrition education programme. Soc. Sci. Med., 1981 ; 15A : 713-719.

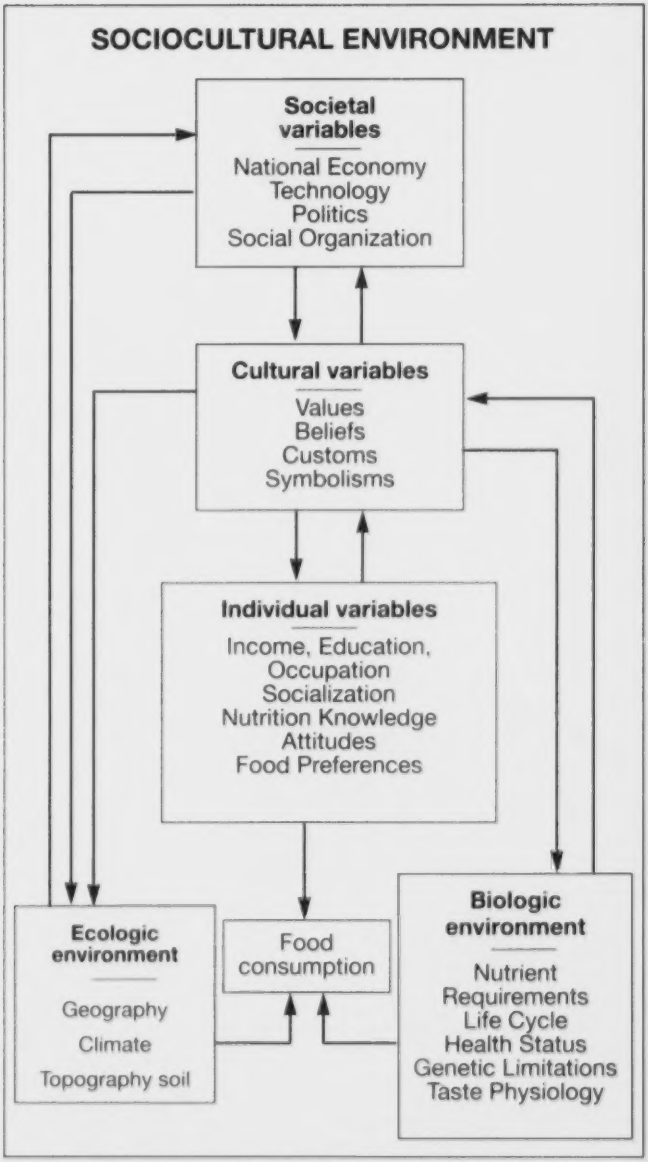

Figure 2 : Interactive components of the determinants of food consumption.
D'après PARRAGA I.M. Determinants of food consumption, J. of Am. Diet Ass., 1990 ; 90 : 661-663

serves to assuage hunger is the main dish, the food that satisfies appetite is the side dish and taste is flattered by relishes. In this classification, the combination of rice, meat and relish represents a rich diet, the combination of root, tuber and meat connotes poverty. This shows the need for messages to be carefully elaborated, taking these values into account so that there is no disagreement between the locally acknowledged values and what is a nutritional ideal from the specialist's viewpoint.

Most nutrition education programmes claim to further health, viewed as a universal aspiration ; this vision may be challenged. For some adolescents, for instance, how important is health in comparison with other values such as friendship, success, a taste for risk (19)? Is this ideal actually motivating? Is health viewed as an absence of disease, or as a necessary prerequisite for well-being? Isn't it sometimes simply a word, a response that makes health workers happy but that is in fact meaningless? Peasants in the Andes pay a high price to have their cattle -their capital - vaccinated, but do not necessarily vaccinate their children - for free - although they are aware of how useful vaccination is.

Individual eating practices are shaped by cultural and social pressure. There is a world of difference, for instance, between how women are viewed in the contemporary western world and in the Touareg culture. In the former, beauty and seduction are values extensively publicized by fashion, the mass medias and advertising, and exert heavy pressure in favour of keeping slim ; women are caught up in the conflict between this socially valued image and an overabundance of food, and are often obliged to go on reducing diets. In Touareg society, women of the nobility are stuffed ; their obesity is a sign of the family's wealth and social status.

Similarly, religions dictate a number of dietary rules, the respect of which represents passive acceptation of some precepts set down by the gods. No nutritionist would imagine suggesting a programme aimed at introducing pork meat in a muslim country ! Many religious rituals make use of food as a symbol, and religious rites are called upon in the different phases of the cycle involved in farming ; for example, an offering of food is a way of asking the gods for an abundant harvest. In the Christian religion, bread and wine, symbolizing the body and blood of Christ, are the vehicles of communion. It is quite difficult for a nutritionist to explain to people that their staple food, their "daily bread" is insufficient. Is it feasible to question the manioc or the bananas that are the basis of the everyday family meal in equatorial Africa (20)?

Some buddhist doctrines advocate poverty and a destitute life which, in a fatalist view, are the deserved consequences of faults in a past life, whereas wealth is seen as the reward for a commen-

(19) L. CARON-LAHAIE, Influence de l'éducation en nutrition sur le comportement alimentaire. Cah. Nutr. Diet., 1984 ; 19 : 229-232.

(20) I. DE GARINE. The socio-cultural aspects of nutrition. Ecol. Food Nut. 1972 ; 1 : 143-163.

dable life or action in a previous life (21). These religious beliefs, coopted by some political leaders for ideological purposes, further complicate the promotion of education programmes for nutrition and for health, especially when workers are ignorant of them.

Beliefs

Let us analyse the term "belief". Every popular culture empirically develops a number of beliefs about food, and these are anchored in each individual very early in life. These beliefs are not scientifically rational, and are often linked to a certain conception of disease.

In many cultures, for instance, bodily harmony is attained by maintaining a certain type of thermal equilibrium. The latter is broken in case of illness, pregnancy or lactation. Heat, warmth or cold are intrinsic properties of each food and are unrelated to the temperature at which they are consumed ; the foods eaten are intended for the maintenance of this heat balance. In case of disease - each disease being catalogued as cold or hot - food is used to achieve recovery by compensating for the imbalance (22).

In some Malaysian communities, for instance, measles is viewed as a hot infection during which the patient must refuse all hot food. At the onset of the disease the simple preparation of such foods in the patient's home is proscribed. Conversely, rheumatisms and colds are cold diseases during which one must refrain from eating cold food and prefer hot food and medication. Each individual is classed according to the current physiological phase of his or her existence : for the Tamouls, for instance (23), pubescent girls and pregnant women are particularly hot whereas during the post partum period women are "cold, too cold". Elderly people are cold in contrast to young adults, men are warmer than women. In these traditions, fatty, spicy foods and food of animal origin are generally seen as hot, whereas fruit and vegetables are cold. It may be noted that the latter are richer in water whereas the former are richer in calories and proteins. As FOSTER (24) points out, the humoral theory is "a marvellously flexible instrument that can be manipulated to give almost any desired result... The point is not that the system is perfectly consistent, but that it always provides an explanation that is deemed acceptable".

This clearly shows the importance of this cultural aspect of diet for nutrition education messages. Their potential effect as an obstacle may be countered without directly challenging beliefs, as is suggested by much anthropological research conducted in a number of cultures, especially in Latin America, India, South-east Asia and North Africa (25).

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(21) M. CHOSSUDOVSKY. Monde diplomatique. May 1991.

(22) L. MANDERSON. Traditional food classification and humoral medical theory in Peninsular Malaysia. Ecol. Food Nutr., 1981 ; 11 : 81-93.

(23) L. MANDERSON. Hot-cold food and medical theories : overview and introduction, Soc. Sci. Med., 1987. 25 : 329-330.

(24) G.M. FOSTER. How to stay well in Tzintzuntzan. Soc. Sci. Med., 1984 ; 19 : 523.

(25) L. MANDERSON. Hot-cold food and medical theories : cross-cultural perspectives. Soc. Sci. Med., 1987. 25 : 329-417.

The comparative, cross-cultural analysis of practices linked to this humoral theory of medicine shows that they vary considerably, and that beliefs tend to change within a given culture : they are able to incorporate new elements. For instance, soft drinks have been catalogued, as have modern medications and tinned food.

Often speech serves as a vehicle for these beliefs, in the form of expressions that are practically proverbs. Such food-related expressions as "wine makes blood red", "eggs make thieves", "eating high on the hog", "to earn your bread", "putting butter in your spinach", "tell me what you eat, I'll tell you who you are" should therefore be analysed.

Food, diet and social organization

Food and diet are both a reflection of each person's place in social organization, and a means of creating bonds with others, of distinguishing one's group from neighbouring groups or other social strata, and of underlining the difference between oneself and other members of the same group. All of this is done within a framework governed by the norms of the society to which one belongs.

In Maradi, Niger (26), many women participate in food exchange networks, independently of their household's economic status, so as to be integrated in their neighbourhood. This system has a levelling effect on individual situations, to some extent, in solving the day-to-day problems of subsistence. Women belonging to relatively poor families threatened by difficult times thus achieve a degree of security. Access to food apparently depends at least as much on the woman's ability to participate in a network as on the economic status of her household.

In those societies where a cast system functions, dietary taboos and the types of exchanges of food are a way of signifying the group to which one belongs. Among the Oolofs of Senegal, nobles receive hommage from "inferior" groups, but in exchange they are obliged to succour them where food is concerned. Their social status compells them to lead a rather frugal life, as a result of which they occasionally have a more deficient diet than the lower casts. Within families, although the meal is often the same for everyone, portions may differ with sex and age. Some people show a real dietary xenophobia, and their cultural identity is then anchored in their scornful way of explaining that "those people do not eat the way we do."

Family and individual behaviour

Both family and individual levels must be taken into consideration. Although an integral part of a culture, with its organization, norms, beliefs and values, each family, with its financial resources, disposes of a certain margin within which to adjust its behaviour according to its educational level and knowledge. With respect to the role played by diet in health status, the family makes use of its ability to innovate and its freedom to put its own ideas into practice.

(26) C. RAYNAUT. Disparités économiques et inégalités devant la Santé à Maradi (Niger). In : G. SALEM, F. JEANNEE, Urbanisation et Santé dans le Tiers-Monde, ORSTOM, Coll. Colloques et Séminaires, Paris, 1989, pp. 447-503.

There is often a relation between socioeconomic level, type of diet and nutritional status, but this is not automatic, and other factors may prevail.

In one neighbourhood in Bamako, Mali (27), dialogues with mothers and the observation of mothers' behaviour with respect to feeding their child from birth to three years, as well as of mother-child relations were instituted by a longitudinal anthropological study, which uncovered the absence of any link between the family's socioeconomic level, the type of family (mono or polygamous, nuclear or extended), the age of introduction of complemental food, the age of complete weaning and the child's nutritional status. In the context of this particular city, some mothers have attitudes that may be termed positive. They are present for their children at mealtimes, pay attention to their likes and dislikes, purchase specific complemental foods on the market and consult a doctor preventively. Conversely, other mothers have none of these attitudes and still others have an intermediate attitude. Children whose mothers show a positive attitude have a better nutritional status. This study also shows that this positive attitude is more frequent in mothers with a great many children. This tends to prove that the experience acquired by mothers has a favourable effect.

This study emphasizes another interesting fact : in this community, people traditionally eat with their fingers, out of a large, shared dish. The mother almost never puts food in the child's mouth. As opposed to other cultures in which food is taken with a utensil, and children are fed by an adult, here children seize food and put it in their mouth by themselves, as soon as they are physically able to do so. The importance of this finding for nutrition education is easy to see.

In Maradi, Niger (28), a study of constraints connected with obtaining and preparing food staples shows that households constantly adjust to change. Practices are not at all rigid : as opposed to rice, more recently introduced, the preparation of millet, the traditional food staple, takes a long time (pounding and sifting), during which much of the original weight is lost, in comparison with the amount of grain purchased. Its cooking consumes much more wood, which is rare and dear. There are hardly any seasonal fluctuations in the price of imported rice, whereas the cost of millet may be multiplied by 5 at some times of year, and may even exceed the price of rice. At some seasons, then, it is more advantageous for families to eat rice, which is more nutritious for the same price.

There are many erroneous ideas in circulation with respect to infant weaning. The conclusions of some studies have been abu-

(27) K.A. DETTWYLER. Infant feeding in Mali, West Africa, variations in belief and practice. Soc. Sci. Med., 1986, 23 : 651-664.

(28) C. RAYNAUD. Personal communication.

sively generalized without being challenged ; these include beliefs about the late introduction of complemental food or sudden weaning in most African population groups.

In the Peruvian Andes (29), families adjust their behaviour to seasonal fluctuations in availability of food ; this leads them to pay special attention to children's diet. Before harvest time, when food becomes scarce, the men leave home in search of a seasonal job. This both reduces the number of mouths to feed and increases the family income. In families where this seasonal migration is not practiced, children are given proportionately more food before the harvest than after it, in comparison with mothers. During the restriction period, the number of meals per day decreases, resulting in a reduction of the energy expended for the assimilation of food (postprandial thermogenesis and protein synthesis), and therefore of daily needs. Physical activity is also reduced, especially in adults. Children, whose energy expenditures are lower for a given activity, continue certain activities that are necessary for the household's well-being, such as herding animals and going for wood.

On the assumption that education for health aims at the modification of individual behaviour, certain social scientists emphasize the need to identify those psychosocial factors that determine whether a person does or does not adopt a particular behaviour. This understanding would then be applied to the selection of the educational message most appropriate to the specific situation of these individuals, but not necessarily through emphasis on health as the driving force behind a dietary (or health) behaviour. For example, in industrialized countries many people go on reducing diets, not for health reasons but to conform with the image of the seductive individual that is dominant in their society. "Knowledge of the factors influencing individual choices that affect their health constitutes a prerequisite for the choice of the method to be used, and for the definition of the contents of educational messages, when an intervention is judged useful." (30)

Theories

The theories applied to the analysis of those psychosocial factors determining individual behaviour may also be applied to health and diet. G. GODIN has produced a descriptive overview of these (30), including the health-related beliefs model, the cognitive social theory, the rational action theory, the interpersonal behaviour theory and the planned behaviour theory. Figure 3 illustrates the way in which these theories may be taken into account in the analysis of the most relevant level or levels to be emphasized in messages in order to achieve the desired modification of individual behaviour. Factors predisposing to action determine intention to act, which takes the form of acceptation (or rejection), influenced by other action-facilitating or reinforcing elements.

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(29) W.R. LEONARD, THOMAS R. BROOKE. Biosocial responses to seasonal food stress in highland Peru. Hum. Biol., 1989 ; 61 : 65-85.

(30) G.GODIN. L'éducation pour la santé : les fondements psycho-sociaux de la définition des messages éducatifs. Sci. Soc. et Santé, 1991 ; 9 : 67-94.

The great variety of present-day theories shows that there is no single predictive model for behaviour, and that it is best to combine these different approaches to gain a clearer understanding of the actual picture. And yet, however enticing this view, it is based on the assumption that it is practically possible to predict individual behaviour, which is grounded in volition, and that what is needed is the means of motivating each individual. Thus, once experts have selected an objective and conducted the necessary studies, they may programme specific types of intervention and messages to be delivered, and achieve the expected results. In this case the logic is one of work on individuals who are turned

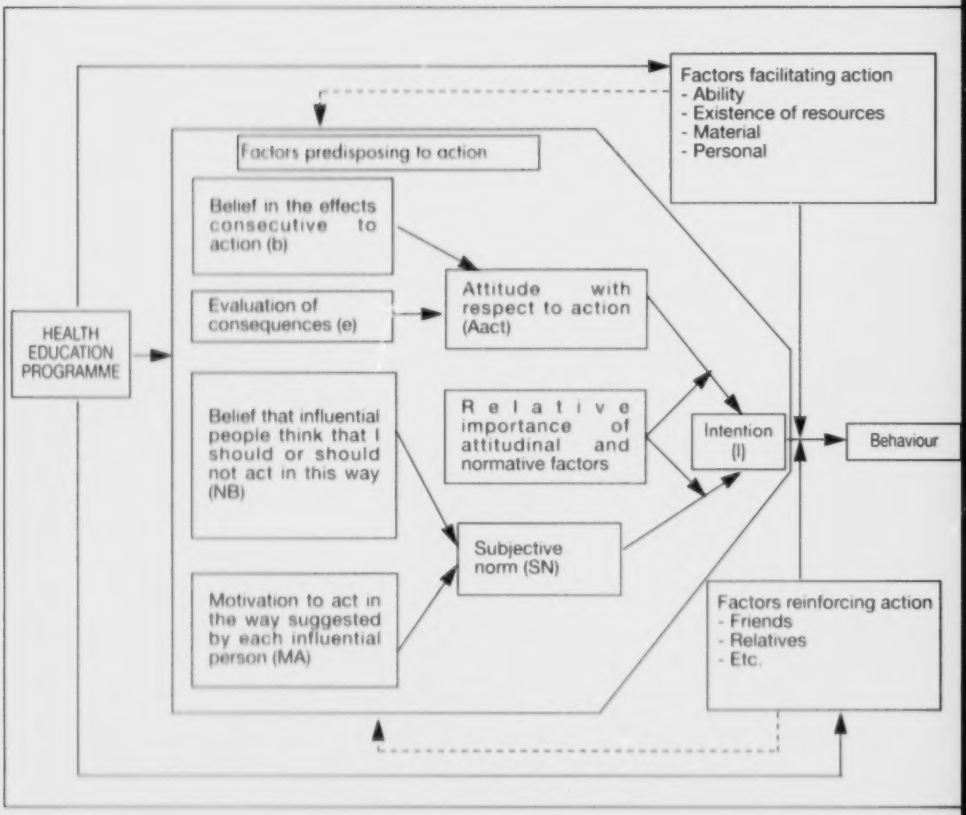
Factors facilitating action
- Ability
- Existence of resources
- Material
- Personal
Factors predisposing to action
Belief in the effects consecutive to action (b)
Evaluation of consequences (e)
Attitude with respect to action (Aact)
HEALTH EDUCATION PROGRAMME
Belief that influential people think that I should or should not act in this way (NB)
Relative importance of attitudinal and normative factors
Intention (I)
Behaviour
Subjective norm (SN)
Motivation to act in the way suggested by each influential person (MA)
Factors reinforcing action
- Friends
- Relatives
- Etc.

Figure 3 : The place of psychosocial behaviour-predicting models in a model for planning educational interventions.

Based on FISHBEIN's model (1975) and the approach to planning suggested by GREEN et al, 1980, in : GODIN, ibid, 1990.

into objects of studies and of interventions that are decided elsewhere. Nutrition education is then reduced to the transmission of properly chosen, well-targeted information, using well defined media. In this view individual responsibility is all-important, and the social context in which personal choices are made is overlooked. In the last analysis, this points to the individual who does not make the proper choice as guilty.

Other authors (31) (32) criticize this volition-based approach, which puts a prime on affecting individuals through educational programmes mostly centred around the delivering of messages ; they prefer working with people, in cooperation with them, rather than for them. "Change can only be real and healthy if it is the outcome of the internal logic of a concerned, responsible group. (...) Successful change is one that takes place within the consciousness and ability to accept of the public involved. (...) The way in which it is gradually attained is as important as what it does or the relief it procures. (...) and Citizens' groups, which until now have been viewed simply as the terrain on which change is operated (should) be associated as joint partners, and placed on equal footing with the usual "agents of change". Too often, social intimidation is used in the introduction of new behavioural patterns (arguments based on authority, moralistic preaching, instilling of guilt feelings, inculcation of a pseudo-science generating new standards of judgment, etc...). This practice develops feelings of inferiority, fearful docility, indifference tainted with anxiety-fraught incomprehension, which ultimately serve to justify all the powers-that-be and their tendency to view solutions from a technocratic perspective. (...) Human groups, with their aspirations and potential, must continue to represent the origin and the goal of all organization-run activities." (33).

This is consistent with the idea of participation of the population, recommended in the primary health care strategy. People then become subjects instead of objects, expressing themselves individually and collectively, analysing their situation with specialists who are capable of listening to them and negotiating projects, one facet of which may be educational, with them. Circulation of information may be a part of this education, but other types of action may involve community organization, supportive social networks which facilitate the acquisition of knowledge and further collective intervention on the environment as well as lasting effects of programmes already implemented. "In this perspective, education for health must be made into a tool for social change rather than a simple means of modifying behaviour." (34)

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(31) R. LABONTE, S. PENFOLD. Perspectives canadiennes en éducation pour la santé, Health Education, 1981; 19 : 4-9.

(32) D. COUET. Le bouclage du sujet. Sci. Soc. et Santé, 1991 ; 9 : 95-101.

(33) G. SERRAF. Propositions pour définir un véritable marketing des problèmes sociaux. Revue Française de Marketing, 1976 ; 60 : 45-81.

(34) J.P. DESCHAMPS. Porter un regard nouveau sur l'éducation pour la santé : la Revue du Praticien. Environnement et santé publique, 1984 ; 34 : 485-497.

These two positions expressed by social scientists illustrate the distinction made earlier in this paper between nutrition education and education for nutrition.

PARTICIPATION OF THE POPULATION

The multitude of factors at work in determining individual behaviour indicate the complexity of nutrition education. People's dietary habits are the outcome of a dynamic adjustment to a constantly moving environment. Cultural pressure and the logic of the social system provide each individual with a framework within which there is little freedom to determine one's personal behaviour. The balance sought by each person in an attempt to reconcile what he or she needs for survival, safety, membership in a community, esteem and self-actualization (35) may be thrown out of kilter by inappropriate messages which in turn may be misunderstood or even rejected.

...in analysis of the environment...

Analysis of these factors is a necessity in a nutrition education strategy. The strictly biomedical view of the problem, in which the response to a deficiency is the recommendation of food containing the desired nutrient, is doomed to failure. Often the participation of specialists in nutrition and the social sciences, in order to discover what determines dietary behaviour and family constraints is impossible and in any case it is insufficient. Participation of the population from the environmental analysis phase on is clearly a prerequisite for the construction of projects. Nutrition education begins at this point, since it provides people with an opportunity to discuss diet and nutrition as such, to achieve a degree of distance from their own practices, to understand these and to consider acceptable and accepted ways of generating positive change. "Helping people to express their own problems is an all-important process : listening to people when they talk about their health and express needs as they themselves perceive them, and not only as they are viewed by specialists..." (ibid 34).

In an analysis of various nutrition education programmes dealing with weaning, A. Aschworth and R.G. Feachem (36) conclude that positive results were attained when negotiations were held with the target groups in order to identify problems and to formulate action for the improvement of the situation.

... by interprofessional teams

This short analysis of the individual, family and social determinants of dietary behaviour shows how the physiological, psychological, sociocultural and ecological factors influencing dietary choices are interrelated. Habits are acquired in childhood, but external factors such as advertising, modifications in living conditions, and also education for nutrition may influence behaviour. An interprofessional approach is required if the situation is to be analysed correctly. Through it, objectives, target groups, tools and means of evaluation of nutrition education programmes may be

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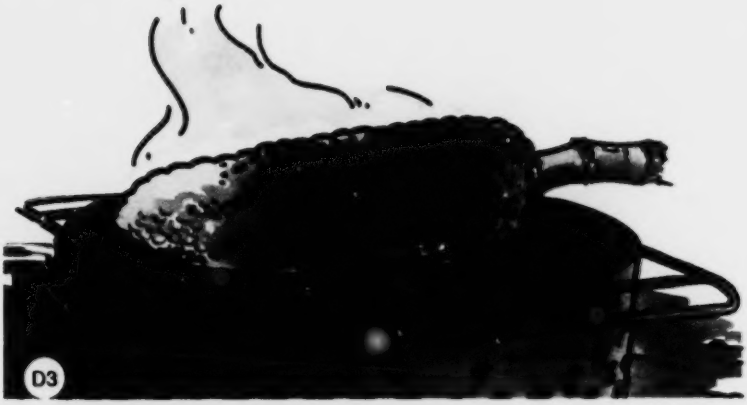
(35) A. MASLOW. Motivation and personality, Harper and Row, New York, 1954.

(36) A. ASCHWORTH, F.G. FEACHEM. Interventions for the control of diarrhoeal diseases among young children, weaning education. Bull. WHO, 1985 ; 63 : 1115-1127.

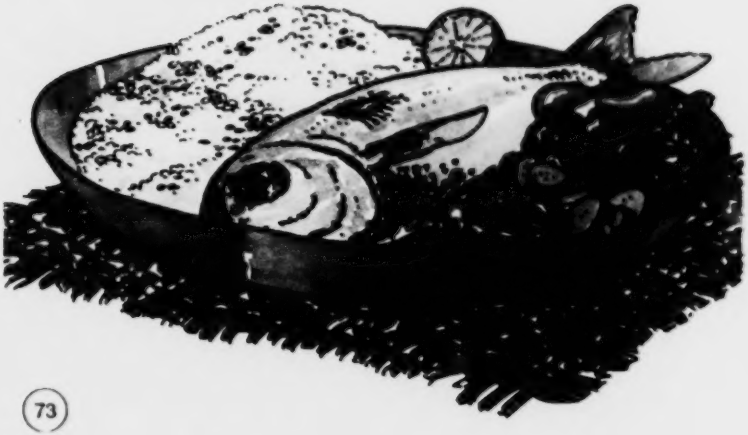
JUST PUBLISHED... A SET OF PICTURES

PICTURES FOR EATING

Some pictures taken from a serie of 170 on food. An educational tool designed for small children by the International Children's Centre.



An ear of roasted maize.



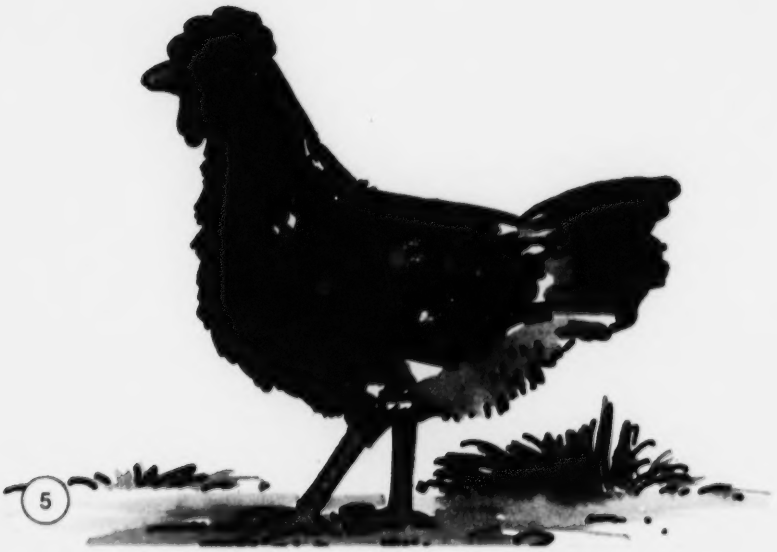
A dish of fish, rice and vegetables.

B1

An egg.

B2

A chick.



A hen.

A roasted chicken.

A vegetable market.

ROSAY VINCENNES ☎ 43.28.18.63

defined. Situation analysis must be on-going and dynamic, so as to incorporate all new elements. Past experience shows that involvement of the population and of its leaders starting at this point is an extremely positive point, and may be decisive for its acceptation of the programme, and for the success of the latter (37) (38).

Analysis of the situation does not necessarily result in a traditional educational programme. The expression of needs and the suggestion of solutions by the population may point to a rearrangement of the food distribution circuit, for instance, involving economic action. Nutrition education is then a process through which groups are listened to, and helped to organize for the solution of social or economic problems that hinder their developmental and dietary capacities. If only individual behaviour is taken into account, a situation of much greater complexity may be overlooked, and the solution may be no more than a poultice on a wooden leg.

Various other methods midway between anthropological research done over long periods of time by a specialist and the observation of living conditions by personnel in health or other fields have been suggested (39) (40). The "focus group", for instance, a qualitative research technique stemming from social science methods, is increasingly used by health education specialists (39). The group is composed of about ten individuals selected on the basis of strict criteria so as to be representative of the public whose opinions are sought. They express themselves freely on the subjects under investigation, with the help of a group leader. The place in which the discussion takes place and the general context must be chosen so that the participants feel comfortable and may develop their ideas. Group homogeneity with respect to age, sex and socioeconomic level is conducive to free expression. Interaction between individuals brings out agreements and disagreements about the issue at hand. The duration of the sessions, usually one to two hours, should always be adjusted to the capacity of the participants. Special attention is paid to themes pertaining to the community's food-related knowledge, attitudes and behaviour, but other questions such as its perception of existing activities, its interpretation of the messages and ideas projected for the programme may be broached. An experienced group leader is required for these "focus groups". This technique is used to determine points to be included in a questionnaire applied to a broader population sample.

Irrespective of the instrument used for research and analysis, it is important that the approach be constructed coherently, and the

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(37) J.D. GUSSOW, I. CONTENTO (ibid 8)

(38) M.T. CERQUEIRA (ibid 9)

(39) S.C.M. SCRIMSHAW, E. HURTADO. Rapid assessment procedures for nutrition and primary health care. Anthropological approaches to improving programme effectiveness. UNU-UNICEF-UCLA, 1988 ; 70.

(40) P. KASHYAP, R.H. YOUNG. Rapid assessment of community nutrition problems : a case study of Parbhani, India, IDRC, Ottawa, 1989 ; 67.

right questions asked, without collecting information that will be of no use for the establishment of the programme and of specific activities.

An example in Ecuador

In the Andes-E programme (Alimentación, Nutrición y Desarollo en Ecuador) conducted by the Quito central University and the International Children's Centre in some rural regions, the initial analysis of the situation by agronomists and specialists in health and population studies showed that communities were most concerned with the improvement of farming production. Later, during conversations with peasants, the problem of insects that attack maize ears during their growth came to the forefront as a priority. The agronomists then suggested the introduction of a variety of maize with a shorter growth cycle, so that a legume could also be grown within the same farming period. Following successful experimentation, this solution was adopted by the farmers. During meetings in communities, losses of grain after harvesting were reported, and the causes, analysed with the families, pointed to a faulty storage system. A low-cost silo adjusted to the mean annual maize production of a family was experimented : it protects grain destined for human consumption against predators. Following a trial by several volunteer farmers, the group as a whole adopted the family silos. The agronomists acted as catalysers of the demands for and implementation of the needed innovations. As a partner in the discussions, the health team sensitized the population as well as the agronomists to the importance of the amount of maize produced for avoiding shortages, and improving the families' daily food ration.

A survey conducted on iron-deficiency anaemia in these areas, and accompanied by an information campaign, showed a high prevalence of this nutrition-related deficiency. During discussions of findings with communities, the idea of reviving a dying crop - lemons - came to light. Several families who had planted lemon trees consumed lemon juice, the vitamin C in which improves the assimilation of iron. The trusting relationship between the specialists (agronomists, doctors, nurses and midwives) and the population led people to formulate many other demands, discuss them and implement solutions.

A symbiotic working relationship then developed, in which the specialists were attentive to the wishes and knowledge of the population and offered their own theoretical and practical science, adjusting their explanations so they would respond to demands that came into being and were clarified by the new understanding. Thus, school gardens were created, and served as a point of departure for the development of family gardens, so that vegetables could be produced and eaten.

Attendance of the health centres increased massively ; family files were created there, so that an overall picture could be achieved of each family's health, taking specific difficulties and living conditions into consideration. Growth curves were used to discuss the case of each child individually with mothers. When agronomists

and the health team visited families at home, they kept the food problem in mind, and discussed means of improving meals.

In community meetings, the problem of water was raised, plans were drawn up for capturing springs, the men dug trenches for pipelines, built compensating reservoirs and showers for school-children ; the locations of taps in villages were also decided at these meetings. A developmental dynamic was created, the farmers organised to improve their living conditions, while the specialists stimulated the expression of demands and helped the population to discover solutions and to put them into practice.

This example is interesting in several respects. Its interprofessional character should be noted : agronomists and health personnel work together in the field, in close contact with families and community leaders, setting up orientations for the various programmes and participating in them in accordance with their competence, exchanging information,and providing mutual criticism and support for each other. The population is completely involved in the analysis of its own situation and in the search for appropriate solutions.

Nutrition education is based on a different approach. It does not stand out as a specific component of a programme : it is the consequence of desires expressed by the population with respect to major preoccupations such as farming production or the water supply. In each demand one may perceive an element that is directly or indirectly related to health and nutrition. This is taken advantage of in order to sensitize people to this particular aspect of their life, which did not seem to require high-priority attention to begin with. From this point on, the process is under way, and may result in improvement of diet, storage of a sufficient amount of grain for home consumption, better hygiene so as to reduce the incidence of infectious diseases, discovery of the importance of regular monitoring of children's growth and of pregnant women. Although there is no explicit demand for nutrition education, the latter is an integral part of a broader project aimed at improving diet and nutrition.

Last, the objectives are clarified and defined as the project moves along. While individuals are responsible for both the quality and the quantity of the food they eat, in the last analysis, their actual range of choice is limited by their living conditions. It is a presently acknowledged fact in nutrition education that if the objective is restricted to the improvement of knowledge, even if it is achieved it rarely results in a positive modification of dietary consumption, nutritional status and infantile and juvenile mortality.

As WHITEHEAD said in 1973 (41), a nutrition education programme has a greater chance of achieving behavioural modification if this is one of its initial objectives. It should be noted that in the Andes-Ecuador programme, as in many others, the demands first formulated by families did not directly concern the health

(41) F.E. WHITEHEAD (ibid 6)

sector. They were most concerned with farming production and income ; this fact must be stressed, since the assumption that health constitutes a priority for all population groups may be a cause of incomprehension and failure. In this case the population first chose to improve the locally available food by acting on farming production and grain storage. These actions contribute both to an increase in the income of peasant families and to a qualitatively and quantitatively better dietary consumption. This is definitely a response to a biological need documented during the food consumption survey, which uncovered the existence of energy and protein deficits. Similarly, the request for piped water was part of a desire to transform environmental conditions. Modifications in the piping of water and in its cleanliness improved both the availability and the quality of water, making it possible to reduce the incidence of infectious diseases, and especially of diarrhoeas, which deteriorate nutritional status.

All of the information, sensitization and education work done by specialized field workers within this project has contributed to people's awareness of the link between food and health, and elicited more individual demands, directly addressed to health personnel, such as requests for monitoring of growth or for advice in order to avoid nutritional deficiencies. This generated the demand for family kitchen gardens, which benefitted from the experimenting done by the agronomists, and from the advice given.

At present, community participation is viewed as necessary for nutrition education programmes as well as for those dealing with rural or urban development or with health. Participation - an active process in which the population takes initiatives, generates actions that are discussed with specialists and truly controls their implementation - makes it possible to avoid the pitfalls of vertical programmes decided by experts unfamiliar with the reality of day-to-day life.

However, community participation requires different conceptions with respect to the organization of programmes and the training of personnel, and these challenge traditional planning and programming approaches, as well as the "power" of specialists. Many factors affect community participation. The latter is expressed in different ways depending on the prevailing combination of these, and follow-up methods and animation must vary accordingly.

RAO (42) contends that these factors are linked to the physical, economic, political, social, cultural and historical context. Examples of factors to be taken into account include the type of political system - democratic or authoritarian -, the land-holding system and the availability of land, the employment structure, social stratification, ethnic differences, attitudes toward the authorities, the types of population concentrations, past experience with development programmes, etc. Similarly, the conception and organization of the programme and its supportive structures pro-

(42) A.P. RAO. Community participation and nutrition, some issues for consideration. Food and Nut. Bull., 1982 ; 4 : 7-10.

mote or disserve community participation. Influential points here include the technical level of the activities implemented, the resources required, the flexibility of the objectives and procedures, the training of specialists, their ability to listen to and to dialogue with the population.

Some agencies are unable to base their programme on participatory decision-making, since decisions are made at the central level, worker attitudes are "haughty", evaluation demands rapidly visible accomplishments, and workers are frequently transferred. Last, popular participation depends on people's awareness of their situation, as well as on their educational level, technical competence, organization, work load and availability.

Community participation cannot be improvised, since it requires a definite type of organization which facilitates the expression of demands, opinions and suggestions by the community, and incorporates these throughout the entire process governing the programmes.

PROGRAMMES

Analysis of the situation is used to determine the objectives of a nutrition education programme integrated in a more all-encompassing action. The following step involves the identification of the

TARGET GROUPS

main "beneficiaries" of the information, messages and activities deployed. This is important, since both form and content differ depending on whether the person addressed is illiterate or a college graduate, a mother or a child, a decision-maker or a peasant, a street vendor or a businessman.

For instance : in many third world cities, breast-feeding is gradually being abandoned. The factors influencing this decline, broadly recognized as bad for infant health, are not the same in different regions, but have some points in common : young women, primiparas, with a better educational level, breast-feed less than others. Early resumption of work, lack of preparation for breast-feeding during the prenatal period, the advertising practices of multinational agrobusiness corporations, the attitude of personnel in maternities and their poor training in nutrition, the image of the "modern woman" propagated by television and magazines and which has become an ideal for everyone, contribute to the decline of this practice.

If the objective is the promotion of breast-feeding, the above list of factors involved in the decision to nurse indicate the inadequacy of limiting action to women only, viewed as a homogeneous public.

If this work is to be done in depth, it seems necessary for it to address itself to pregnant and lactating women, workers in charge of prenatal surveillance and maternity ward personnel, but also to adolescents and teachers, if a programme is to be run in schools. Journalists and policy-makers should not be overlooked, in an attempt to limit the promotion of commercial milk formulas, obtain adequate post-natal maternity leaves and achieve a policy promoting breast-feeding.

Analyses of programmes promoting breast-feeding are provided in a number of studies (43) (44).

In many cities in developing countries, where the prevalence of protein-energy malnutrition and diarrhoea is high, mothers may frequently be seen to purchase complemental food for their infants. This behaviour corresponds to the specific dynamics of urban life, where limited time combined with financial difficulties lead mothers to buy food instead of preparing porridges for their children. This practice is good for the market economy ; it stimulates the purchasing of local produce, generates employment and substantial revenues for vendors. However, studies of the quality of the food shows it to be contaminated by pathogens and to have a low nutritive value. Given this state of affairs, action aimed at some target groups such as street vendors and the people who prepare this food may be developed, but it should not overlook political and government officials who deliver the authorizations to sell on the streets, are in charge of public hygiene and of the adoption of certain regulations. Work with town officials in charge of urban infrastructures (water supply, waste disposal...) and with buyers, to help them become informed consumers is another possibility. The reader is referred to a FAO publication on this subject (45).

Dietary habits incurred during childhood influence future consumption. In industrialized countries and in the privileged strata of developing countries, certain types of behaviour conducive to obesity are acquired in early childhood. When they enter primary school, children know little about food, its origina and effects on health. Conversely, they are extremely sensitive to advertising at that age, and the latter attempts to reach their parents through them, and to influence their buying habits. School may play a role in the process of learning to have a healthy, balanced diet.

The target groups for programmes aimed at creating favourable conditions for the development of positive attitudes in children and helping them to become enlightened consumers (46) may be schoolchildren, their teachters and the school administration. The children's parents must also be touched, so as to avoid disagreement between what is learned at school and what is practiced at home.

MESSAGES

Analysis of the situation brings out the tremendous interaction between individual and familial dietary behaviour and the specific

(43) D.B. JELLIFE, P.E.F. JELLIFE. Programs to promote breastfeeding, Oxford University Press, Oxford, 1988 ; 490 p.

(44) International nutrition communication service (INCA). A retrospective and prospective look at international breastfeeding promotion programmes, Educational Development Center, Newton, 1987 ; 184 p.

(45) FAO. Street foods, les aliments vendus sur la voie publique, la venta de alimentos en las calles, FAO Food and Nutrition paper, Rome, 1990 ; 46 : 96 p.

(46) E.H. WEISS, L.C. KIEN. A synthesis of research on nutrition education at the elementary school level, J. Sch. Hlth., 1987 ; 57 : 8-13.

social, economic, ecological and cultural factors present in the population studied.

Two orientations, which are not mutually exclusive, may be considered with respect to the messages to be delivered. One consists of promoting knowledge, attitudes or behaviour in individuals or groups of individuals. The other aims at encouraging positive trends within the production, economy, employment and culture. The targets are both the population and the political decision-makers and specialists in charge of food and health sectors : in other words, society at large.

Nutrition education is no magical solution which would solve deficiency-caused malnutrition problems, the roots of which are deeply anchored in underdevelopment or social exclusion.

The basic prerequisites for affording a population with the means to sustain the benefits of any improvement in its behaviour rest on programme follow-up and long-term action. Too often, however, programme planning and budgeting is only done for two or four-year periods. Further, the structural readjustment policies of the 1980's resulted in increased impoverishment of the neediest groups, by limiting their dietary resources in particular. Even if messages aim at improving living conditions, their impact, on the national level, can only be seen in the long term. The result of all this is that although there is better acceptation of this overall environmental improvement approach at present, it has not had the expected results ; it must be said that the strategies involved are still quite vague (47).

Some examples

In the ANDES programme, community participation in the definition of objectives and action has resulted in the selection of "messages" and activities which create the conditions for improvement of dietary consumption and nutritional status. Furthermore, discussions about the communities' concerns and demands generate a climate conducive to the adoption of new behaviour by some families without the risk of being marginalized within their social group. On the contrary, they become explorers, opening a path and acting as examples.

If, as the proverb says : "Give a man a fish and he will eat on that day, teach him to fish and he will be able to eat for the rest of his life", there is also the question of who owns the place where he can fish? Does he have access to the instruments required for fishing? Can his safety be ensured? If messages do not take into account the conditions of access to food and to the improvement of hygiene, the adoption of favourable behaviour may, in the long term, turn out to be insufficient for people who run the greatest risk of malnutrition.

Messages must reach people with political responsibilities, and the population at large may be the motor of action in a democratic framework. If, for efficiency's sake, a programme aimed at comba-

(47) Towards a new perspective on food and nutrition education, Cajanus, 1986 ; 19 : 125-131.

ting vitamin A deficiency concentrates exclusively on the means of distributing medication in the form of pills, neglecting action aimed at promoting the growing, distribution and consumption of food rich in this nutrient, there is a risk that the ultimate outcome will be shortages, and complete dependency of this population on the major pharmaceutical corporations.

In the Indonesian project, following initial research calling on community participation, seven main preoccupations were expressed by mothers ; these varied with their condition and their child's age. Seven messages were then developed, each one designed for a specific group of mothers (48).

Pregnant women should eat four meals daily, eat green vegetables four times a day and take an iron pill. Lactating women should eat four meals a day, eat green vegetables four times a day, take an iron pill and drink eight glasses of fluid a day. Lactating women with an infant under 4 months old should give breast milk only, with suckling at both breasts at each feed. Lactating women with children aged 5 to 8 months should also have both breasts suckled, but should also give bubur campur (fortified rice porridge, the receipt for which has local variations) four times a day. Patience should be exerted in introducing this complemental food. Lactating women with a child aged 9 to 24 months should give him or her the same food as adults, four times a day, including tahu, tompe (soy-based foods) or fish and green vegetables. It is advisable to offer food between meals as well, and to pursue breast-feeding.

In case of diarrhoea, every mother should be able to give her child oral rehydration solution, made of two pinches of salt, a soupspoon of sugar and a glass of water or of tea .

All children under 5 years old should be weighed every six months. If weight stagnates the child is not in good health ; following nutritional counselling by a health agent, he or she should be given more food.

A social communication programme diffused messages on radio broadcasts and posters, encouraging mothers to participate in monitoring their child's diet and in weighing sessions accompanied by educational modules. These messages provided appropriate behavioural objectives, established in collaboration with mothers and tested by them to make sure that they are practical in the local context.

In Bangladesh, village health agents tested messages on their own family, then transmitted them to volunteer mothers with children in the process of being weaned. They themselves made home demonstrations in the presence of other village women. Simple messages about inexpensive food were effective, whereas those recommending the use of protein-rich food (milk, fish, eggs) did not encounter any echo. They were then modified to empha-

(48) R.K. MANOFF (ibid 2)

size intake of energy-rich food (oil and sugar). Furthermore, it was impossible to ask mothers to prepare more than two meals a day for their child.

Although many teachers have children do some cooking, there are no national guidelines with respect to education for nutrition in French nursery schools, in particular. To achieve better insight into the situation, the ICC conducted a survey aimed at analysing differences between what 5 year-olds actually know and what their teachers think they know (49). Great discrepancies were found with respect to both behaviour, attitudes and knowledge. Teachers tend to underestimate children's knowledge, and to view them as more difficult to please, taste-wise, than they really are. Teachers also see children as buying a great deal of candy, which was not at all evident in the children's answers. Cooking activities in schools encourage overall development in children, but the absence of analysis of children's knowledge and attitudes detracts from the definition of objectives for nutrition education. The findings of this study were discussed with teachers, appropriate objectives were then defined and tested in classrooms.

Here is a glimpse at guidelines. A 5-6 year-old should know that everything eaten is food, and that dishes, as well as foods, contain different ingredients.

The child should be capable of identifying sweet, salty and fatty foods.

The child should be capable of disapproving excessive consumption of food containing fat, highly salted food, candy and soft drinks.

CHANNELS OF COMMUNICATION

By channels of communication, we mean the visual as well as sounds and language. There are many means available for the transmission of information and skills, and these are not mutually exclusive. Experience shows that once the ideas to be communicated have been clearly defined, it is best to use a combination of different means of communication to achieve one's goal, so as to avoid discrepancies which detract from comprehension and the adoption of the desired attitudes and behaviour. The multiplication of these channels, so that the public may look, listen, discuss and act, is extremely conducive to learning. The instruments of communication must be adjusted to the public, its size, its more or less dispersed geographic location and the amount of time of which it disposes.

One-to-one contact

Direct contact between a specialist and an individual may be highly profitable, especially if the specialist is able to listen, is gifted as an educator and is properly trained. This makes it possible to adjust messages to the person's questions and specific difficulties, following an effort to help him or her to express these. One-to-one contact may take place at the health centre, but the best time for this is always during home visits. This type of com-

(49) M. CHAULIAC, M. D'AGOSTINO and A. GILBERT-COLLET. Les enfants de maternelle, leurs instituteurs et l'alimentation : Cah. Nut. Diet. 1990 : XXV : 420-424.

munication has some drawbacks : the specialist must have enough time, be truly competent and have confidence in the population. Distances sometimes make it difficult to visit homes.

Meetings

Contact between a specialist and a group of individuals is the most frequently used technique. The place and the time must be chosen by general consent. Too often "talks" are addressed to a "captive audience" waiting in the hall of a health centre, more concerned with the reasons for which they are consulting, or with some other problem, and resluctant to listen or to enter a conversation. Furthermore, this often takes the form of a lesson, during which an unmotivated specialist transmits knowledge through an often repetitious lecture, using a more or less appropriate vocabulary, while the public is not allowed to ask questions.

Specialists who are to deliver this type of education must be truly gifted in group leadership, and able to incite the audience to express its difficulties and to discuss the means already employed to solve the problems. Groups should not exceed 10 to 15 individuals. This type of meeting prompts discussion between participants with the same type of constraints, and enables them to seek out solutions together. These sessions do more than simply transmit knowledge : they should make it possible to solve some clearly formulated problems. Group dynamics constitutes the main difficulty, and rests in the hands of the group leader.

Demonstrations

Practical demonstrations must be done - at home or in teams - when the group is ready for them ; that is, when there are questions about how to do some cooking. They should always be done under the usual conditions for food preparation at the family level : same ingredients, cooking utensils and fuel. It is preferable that the women do the cooking themselves, rather than just watching a demonstration. Their own difficulties will then become evident, and trigger discussion. This type of activity may be implemented in neighbourhoods, through the action of "leader mothers". These sessions are educationally more attractive, and may also deal with obtaining food, food hygiene and the prevention of accidents in homes. In the same vein, visits to the marketplace are propitious to discussion of the quality of the food sold, its cost, how to choose items, the composition of meals.

Mass media

The mass media include all of the instruments for the large-scale communication of information, and especially posters, radio, the press, television and books. If these are well chosen, they have the advantage of reaching a very broad public. On the other hand, they are costly, difficult to adjust to specific cases, and their diffusion is often limited. Advertisers and businessmen, who use them extensively to sell commercial products, are well aware of the limited impact of such messages if they are not repeated at regular intervals. Furthermore, there is a major difference between the objectives of commercial advertising and those of communication for nutrition education. In the former case, the aim is to encourage consumers to buy a product, and when 2 to 5 % of the target group adopts the desired behaviour the profits made satisfy busi-

nessmen. In the latter case, the objective is far more ambitious, and the results more difficult to measure. Use of the mass medias therefore cannot be viewed as the only means of communication for nutrition education. Relays must be found, so as to create synergy and to influence the public at each stage of learning. Further, many developing countries dispose of few specialists in communication capable of creating such programmes. Access to mass audiovisual techniques is often difficult, and runs up against the powerful financial interests of corporate agrobusiness.

In 1990, the FAO conducted a survey aimed at 86 developing countries (43 responded to the questionnaire) ; this study shows that the main obstacles to the use of the mass medias are the lack of financial resources, the absence of competent specialists and of material for the production of programmes. This study also points to difficulties in training personnel and in gaining access to sufficient broadcasting time on radio and television, as well as to the lack of political determination (50).

The choice of medias must be based on strict criteria and take into account the nature of the public and its educational level, its ability to read and to interpret pictures, and the number of radios and television sets. Before generalising the diffusion of messages, these must be tested to determine what people retain, understand and re-interpret.

The use of visual, auditory and material tools seems to be valuable when nutrition education involves contact between an educator and an individual or a group. The best tool here is the up-to-date growth curve for a child, interpreted and discussed with the mother individually or with the community in the case of collective growth charts. When properly used, this is a very effective means of promoting community participation in the analysis of the local situation, the selection of messages and the implementation of a programme, not to mention its ongoing evaluation.

There are numerous other techniques, such as films, songs, videos, theatre, pamphlets, flanelgraphs and slides. The tools most appropriate to each situation must be chosen, and tested to determine the target group's comprehension of what the designers aim at transmitting.

A satisfactory balance must be achieved between the budgetary resources and the production of tools. The appropriateness of pictures and language to the local environment (housing, vegetation, clothing, food, body positions, popular expressions, idiomatic speech, accent) is an important factor, since it limits errors and facilitates people's identification with the substance of what is being told to them. The use of material developed in a different setting and/or for other purposes distracts attention from the essence of the message, since people are astonished by and comment anecdotal aspects. Conversely, all available resources

(50) K. VISAYARAGHAVAN. Report on a FAO questionnaire survey of nutrition education through mass media in different countries. In : FAO report workshop on nutrition education through mass media, 3-5 dec 1990 (publication forthcoming).

should not be used to produce material, since the latter may then become an end in itself rather than a tool serving an objective. Irrespective of the communications channel used, every attempt must be made to obtain an evaluation, or feed-back, as to the public's comprehension of and reactions to the contents transmitted. For instance, in traditional talks where the message is that diet should be varied, mothers may react by incomprehension because of the language used, an unclear presentation or one in which too many ideas are expressed, the educator's speaking in a low voice or mothers who do not pay attention. But again, there may be a rejection of the message, because it seems impossible to apply owing to an insufficient family budget, a lack of time or too great a disagreement between what is explained and the mother's own knowledge and beliefs (51).

EVALUATION

A driver who hears a clicking sound on a car wheelstops to check on it. If a bolt is loose, he or she does what is necessary and then drives on under safer conditions, so that the passengers will arrive at their destination. The evaluation tool, in this case, is the driver's ear. Once the problem is analysed and repaired, the defect has been corrected, for the greater safety of the passengers and the preservation of the material. The driver has accomplished his or her mission.

Within the entire process - defining the objectives of nutrition education, identifying target groups and messages, programming activities, chosing the means and tools to be used in communication and training the personnel - there is no guarantee that the programme will go well or achieve any results. It is important that any improper functioning, owing to unexpected problems, be uncovered so that the project may be reoriented to avoid wasting resources and time, and undermining whatever trust exists between the participants. Through this, any blocks will be identified, and the decisions necessary to unblock the situation may be made. This is called process evaluation.

Showing that the programme has attained its objectives or conversely, that these were only partially attained or not at all, is also essential for the future. Experience is always profitable for other population groups and for professionals. This is called evaluation of impact.

Every programme has a price. Financial resources are limited, and choices must be made. This is particularly true since, as we have already seen, the amounts devoted to health education are generally small. Financial evaluation is useful, then, to determine the efficiency of a given programme in comparison with other activities aimed at improving community health.

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(51) D. WERNER, B. BOWER, Helping health workers learn, Hesperian Foundation, Palo Alto, California, 1982.

The essence of evaluation is a value judgment on an intervention or on any one of its component parts (52). This is not easy to do, it is occasionally misunderstood and often puts one in an uncomfortable position, since evaluation constantly questions what has been accomplished. And yet, far from sanctioning the main participants in a project, it is a means of analysing the difficulties encountered, in order to improve the programme and to bring out the value of achievements, so that the efforts already made may be continued. Evaluation is not an end in itself, it is an instrument used for decision-making.

All told, the lack of evaluation is the main weakness of a great many nutrition education projects, and discredits them. SCHURCH (53) cites this anecdote : a volunteer working in Malawi became aware of the high prevalence of malnutrition and began nutrition education of mothers at consultations. Some time later, he wrote a song, with the following words : "Put peanut flour in your children's maize porridge and feed it to them three times a day so they will be beautiful, strong babies". The song soon became number 1 on the country's hit parade. Did it change mothers' behaviour? Children's nutritional status? No-one will ever known, since no evaluation was done.

The methods, means and tools used for evaluation are extremely varied. They will be studied in a forthcoming issue of this journal. Evaluation is an integral part of every programme, but is not the goal, and should not drain all available resources, to the detriment of activities themselves. The questions for which evaluation must determine answers are specifically defined at the same time as the objectives and strategy are set. This makes it possible to select the most appropriate criteria and methods.

Process evaluation

Process evaluation leads to the formulation of questions as to the structures, the available resources and what has been accomplished. The responses must be quantitative : for example, the actual availability of staff, educational material, the time and schedules planned for broadcasting radio messages, the number of talks delivered and people reached. Qualitative assessments are also necessary, however. For instance, the freedom left to individuals to express their demands, the adequacy of the vocabulary used by officials, and the interpretation of information received should also be analysed.

Evaluation of impact

Evaluation of impact investigates the achievements observed at the end of the programme, and determines whether the objectives set were actually attained. To do so, the initial data must be consulted and compared with changes obtained through the programme. In the course of the latter, many other factors will also be at work, and the effect on the population can rarely be attributed exclusively to a specific action. This explains the need for a

(52) A.P. CONTANDRIOPOULOS, F. CHAMPAGNE, R. PINEAULT, Evaluation d'une intervention : un cadre général de référence. In : L'école par le menu, Methodes et pratiques en éducation nutritionnelle, E.N.S.P., 1989 ; 227-235.

(53) B. SCHURCH (ibid 4)

control group with the same characteristics but which does not benefit from the programme. The financial evaluation measures the cost of the investments underlying the activity (wages, training, production of material, transportation), plus what is known as invisible costs such as the amortization of equipment, the time spent by the population on the activity, etc.

Process evaluation is on-going, and is based on the analysis of notations, reports, and supervisory visits. As for impact, it can only be assessed if the activities are continued for long enough, so that change may occur. In the case of education, there is also the question of whether the results attained are lasting. Knowledge, attitudes, new behaviour or an improvement in nutritional status achieved at the end of a programme may very well disappear some time later if the effort is not pursued.

The action may be evaluated by an experienced outside observer : this has the advantage of introducing a new view, and a judgment unaffected by the everyday problems, conflicts and passions. However, such an individual is unfamiliar with the local situation and cannot always see all aspects of it ; furthermore, the cost of this type of approach may be too high for projects run on limited resources. The ideas expressed by this evaluator must be analysed and discussed by all participants in the programme.

The evaluation may also be conducted by someone who is directly involved in the project. This reduces cost, but the conclusions are biased by the person's knowledge of the programme, including how it is run and its difficulties.

Following the analysis of some major nutrition education projects implemented in developing countries, CERQUEIRA (54) concludes that : "Inclusion of some community members in the evaluation of the process and of the impact of nutrition education programmes may improve their impact. The information obtained may be a powerful motor for attaining greater changes in behaviour and improved solution of problems". The evaluation component of a programme then serves as an education strategy. Monitoring of growth is both an instrument for the evaluation of impact and an educational method. By monitoring growth, mothers evaluate their own ability to improve their child's nutrition and the effects of this on the child's health. Furthermore, involvement of participants in the evaluation of a programme makes for a more efficient use of the limited staff resources available.

TRAINING OF PERSONNEL

The ability of staff members to encourage family participation, to apply a nutrition education strategy, to develop activities, communicate and use effective educational tools, depends on their training. The number and quality of personnel are the main limiting factors in nutrition education (55). Too often, the basic and on-going training given to field workers, and even to community

(54) M.T. CERQUEIRA (ibid 9)

(55) R.C. HORNICK; Nutrition education, a state of the art review ASS/SCN, Nutrition Policy discussion, FAO Rome, 1985 ; 1.

health agents, is too theoretical, makes use of directive teaching techniques involving the transmission from teacher to student of information on nutritional requirements, the nutrient content of food, and some curative or even preventive activities. Workers who have received this training tend to reiterate the same methods when dispensing nutrition education.

A radical transformation of the objectives and methods of personnel training programmes seems to be mandatory. These must include active teaching methods, with discussions based on the specific experience of students, as well as on what they know. Practical activities and demonstrations, actual experiences, role-playing and the development of educational tools, analysed by the group as a whole, prepare workers for the use of participatory educational techniques. Educators are group leaders, facilitators of personal expression and of operational synthesis. To achieve this, short sessions must be held repeatedly in the field, in close contact with the community which is the object of studies and analysis during the training period. Short educational sessions should be conducted by the workers in training, critically and instructively observed by their peers as well as by the teachers in charge of the training unit.

Supervision plays an essential role in the training of and on-going support for workers who are often in positions of responsibility. It should not be viewed as a simple check on how resources and time are spent, or as a means of identifying errors to be sanctioned. If it is to be used as a major instrument in improving the personnel's competencies and knowledge, specific training must be planned for supervisors, along with a clear definition of their tasks.

In India, in the Naranjwal project, family health workers are given a two-week theory course, followed by two weeks of field work. From then on they meet twice a month for a one-day on-going training session. This makes it possible to adjust training themes to the specific problems encountered in day-to-day work (56).

In the Tanzanian Iringa project, the acknowledgement of the importance of training field personnel, traditional birth attendants and community leaders is visible in the budget, part of which is devoted to the production of educational material (57).

In Cuba, a programme encourages active training techniques. Two weeks of the four-week session are devoted to activities within communities. The trainers observe the personnel in training, then discuss their impressions and the difficulties encountered with them (58).

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(56) A.A. KIELMAN, C. DE SWEEMER, D. CHERNICHOVSKY et al. Child and maternal health services in rural India : the Naranjwal experiment. Integrated Nutrition and Health Care, The World Bank and the Johns Hopkins Univ. Press, Baltimore, 1983 ; 257.

(57) WHO-UNICEF. Improving Child Survival and Nutrition, The joint WHO-UNICEF Nutrition Support Program in Iringa-Tanzania, Evaluation Report, Dar Es Salaam.

(58) M.T. CERQUEIRA, ibid (9).

AN EDUCATIONAL PROJECT : FOOD AND DIET IN A NURSERY SCHOOL IN WEST AFRICA

School has begun, and as she does each year, the teacher took the children to explore the neighbourhood in which their nursery school is located. The idea is to familiarize them with their new environment, but also to identify subjects that interest the children, and around which programmes will be built.

In this rapidly changing neighbourhood located at one end of the city, a hotel-restaurant had been built and had just opened. The children were dazzled by this relatively luxurious building, which stands apart from its surroundings, and they discovered what a hotel and a restaurant look like. They were particularly attracted to the restaurant, and explored it from top to bottom, including the dining room, the bar, the kitchen and cold storage room, and even the garden and rest rooms ! They questioned the manager, waiters, barmen and cooks eagerly, and wanted to know all sorts of things, since most of them had never been to a restaurant before. Not only is that not in their family's habits, but it would not be affordable for them.

The children expressed a strong desire to eat lunch at the restaurant, but were unable to explain why this seemed to desirable. They were enthralled by the prospect of eating in an inhabitual place. The curtains, dishware, tablecloths and matching napkins, the parasols in the garden, the music all filled them with admiration. It was the environment, perhaps even more than the food, that they found so terribly attractive.

Gradually, the children came up with the idea of transforming their activities room into a restaurant, and of inviting parents to come and eat there. As the days passed, the term "to eat" was defined more precisely, and came to mean "to share a meal" prepared at school. In addition to arranging a dining room in one room, the children planned to organise an outside restaurant terrace in one corner of their courtyard.

The project culminated with the preparation of a festive meal, with the help of the parents, served in a restaurant-style room by the children in that class to the other children in the school and to their parents.

EDUCATIONAL VALUE AND OBJECTIVES

The first important thing about this project is that it provided a concrete, natural means of approaching children's dietary problems in their own life context, in collaboration with families, through activities that are commonly practiced in nursery schools. In addition to the school's general objectives with respect to children's physical, psycho-sensorimotor, social, emotional and cognitive development, this project aimed at increasing children's awareness about diet, teaching them to eat traditional dishes made of locally available food. The theme of food and diet was chosen with the parents' approval. The teacher then made an

inventory of the subjects that might be studied within the framework of a project of this type.

Food

- the concept of food (everything that is edible and is eaten is a food) ;

- the concept of eatable food (the notion of ripeness, for a fruit, for instance, the notion of food storage, of cleanliness with respect to food, of the prevention of accidents caused by food poisoning) ;

- knowledge of locally available food and of seasonal variations in availability ;

- the different types of food and their classification on the basis of origin (animal, plant), natural or processed, as well as of their taste, consistency, colour, smell, etc. ;

Preparation of food

- notions of cooking, cleanliness, prevention of accidents caused by fire or by sharp or pointed objects, first aid in case of an accident.

Consumption of food

- notions of raw and cooked, storage of food, the concept of a dish, a meal, quantity, cleanliness surrounding a meal.

Food, growth and health

- the importance of food for growth, changes in diet with age, monitoring of children's growth, body and health.

Food and society

- the role of food in social life, conviviality (sharing a meal, table manners, receiving guests) food and festive occasions.

It goes without saying that these were all just possibilities, to be exploited diversely depending on the interest shown by the children. Nor was the list complete : it could be extended as activities progress and as children make suggestions. From there on, specific objectives could be defined.

PREPARATION OF THE PROJECT

First, educational objectives and criteria for evaluation had to be determined. If the objective was to teach children to recognize different foods, the criteria for evaluation might be their ability to name them when they are shown either pictures or the actual food, or are allowed to taste, smell or feel them.

Next, activities had to be planned and organized. These made use of techniques such as speech, arithmetic and manual work, usually employed with small children.

The teacher observed the children and their habits during the daily food breaks. Conversations with them dealt with their diet and how they view it, so as to define relevant objectives taking into account their needs and desires. Children have their own ideas about the need to eat and the effects of different foods on the body. They also have prejudices with respect to certain foods, although they may never have tasted them. Snacks eaten at school only represent a small part of what the children actually consume, and only provide a partial view of their diet, their relations with food, their likes and dislikes, both real and imaginary. Visits with families yielded a better picture of what people eat, how families prepare dishes, what portion is reserved for the children and what reference values prevailed with respect to diet.

Meetings with health and nutrition specialists were helpful as a way of approaching children's nutritional problems, and encounters with specialists in agriculture and animal husbandry provided a better understanding of all aspects of food production.

The teacher made repeated visits to the restaurant and the market, so as to prepare the different encounters requested by the children. She gathered documents relative to the project such as pictures, photos, songs, proverbs, documentary books and educational materials.

The material required for the activities then had to be collected, using recycled objects, clay, etc... Meetings with parents enabled the latter to follow the progress of the project, and to contribute to it.

THE PROJECT ITSELF

The project involved two main activities : the transformation of the activities room into a restaurant dining room and the preparation of the meal.

Preparation of the dining room

The transformation of the activities room into a restaurant dining room led the children to raise a number of questions, and to discover the answers : what must be done to recreate the atmosphere of the restaurant? Who should be invited? What must be provided so that each diner will find a place and be able to eat?

This led to the decision to produce curtains to decorate the room, as well as tablecloths, napkins, vases and bouquets of flowers, aprons for the waiters and hats for the cooks.

The production of tablecloths and napkins raised the question of how many people would be served, and how many tables were needed. A list of guests was established, and a plan of the room, with tables, was drawn up. In the course of this work, it was discovered that the activities room was too small for the number of guests, and the children suggested that tables be set up in one part of the courtyard, and parasols be made.

During this phase, the children participated in mathematical and language activities, and were introduced to writing. How many diners will there be? To answer this question, it is best to count, but these five-to-six year-olds were not yet able to do so. Concrete ways of motivating them to count needed therefore to be found, and they had to be helped to understand numeration, as well as other mathematical principles such as the notion of the basic unit (the base of counting is generally ten), addition, multiplication, one-to-one correspondence, etc...

At the outset, each child questioned his or her parents and said how many members of the family, him or herself included, would attend, making a drawing of each person who would come, to confirm their presence. The next step involved giving the children pieces of cardboard (one piece for each person), so that they could draw a sign on them representing their family : the same sign for all family members, but a small one for a child and a larger one for an adult.

At the end of this process, each child was placed in charge of five people, and retained this responsibility throughout the preparation and until the meal itself. Each child needed five places to sit at a table. The children met in groups of four, and worked at finding the necessary places for all of the people under their responsibility. They decided to sit them around tables, and to materialize the seats and the places at table by pebbles. A guest card subsequently replaced each pebble.

Tables and chairs could not be immobilized from the beginning of the process until the day of the festivity ; the children therefore drew up a plan of the room and of the courtyard. Each group of four children cut out and pasted up a plan of the tables required for their guests, with each diner represented by a plate, a sign or a name. An overall plan was then made by those children who were able to copy : they wrote the name of each guest on the circle representing his or her plate.

All of this preparation provided an opportunity for creative activities such as drawing : reproduction of the design on the restaurant's curtains, tablecloths and napkins (stripes, crisscrossing) and production of placemarks for each guest. The children did manual work : they shaped vases using potter's clay, made napkins out of various pieces of material, made parasols out of palm leaves or cut out paper nats to use as table settings.

Selecting the menu

What do people eat in restaurants? What will we serve at our meal? The children first read the menu of the restaurant and questioned their parents, and then, after much work, they were able to decide what they would serve.

The first phase of this work was the "translation" of the menu of the restaurant and its retranscription into drawings and signs, so that all of the child could understand it.

Several visits were made to the restaurant, to determine what was meant by certain mysterious expressions such as "à la carte" meal, today's special, fruit in season, fish, depending on arrival, as well as the reality behind certain expressions such as filleted fish "belle meunière", fried fish, broiled steak or boiled potatoes.

The work dealing with reading the menu introduced the notions surrounding the meal (number of meals, their names, their contents depending on the time of day, festive meals), the concept of "dish" (local names, their composition, how to make them). A receipt book using pictures, drawings and signs showing receipts for family dishes was made.

A comparison of what the restaurant serves each day and what families eat raised several questions such as why does the restaurant offer so many different dishes? Can you order everything and eat everything? How does the restaurant decide how much food to give to each customer? How do you decide what you want to eat?

These questions led to a discussion of the necessary amounts of food (hunger, fullness, food needs depending on the body, activity, growth), and the times and rhythms of consumption...; conversations dwelt on tastes and eating habits (the kinds of food that exist and those eaten by families), foods eaten by children and parents, who prepares what kind of food, and, of course, the inevitable question of "do you have to eat food that you don't like?"

The teacher organized some activities around food preservation (a visit to the restaurant's cold storage room, a survey of families to determine all of the ways of keeping food), the composition of a meal and of a dish, etc...

These themes resulted in a number of classifications of appetizers, meats, fish, vegetables, desserts, beverages, food eaten raw or cooked, hot or cold, produced within the country or elsewhere, known or unknown to the children, liked or disliked, simple or complicated, quick or long to prepare.

At the end of these studies, the children chose to serve a "menu of the day" rather than an "à la carte" meal.

Since eating in a restaurant connoted a festive occasion, it was decided that a special meal should be served : this would be a traditional dish similar to those ordinarily eaten by families, preceded by an appetizer and followed by a dessert, selected from the restaurant menu. The order would be the same as on the restaurant's menu of the day, with a tomato salad as a cold appetizer, the day's special which would be rice with fish, and fruit salad for dessert. The beverages would be a fruit juice cocktail before the meal, and carafes of water.

Organization

The children were divided into four groups, each of which was in charge of one element of the meal, and kept the others informed of the progress of the work.

The first group was in charge of the tomato salad. One child explained that tomatoes are grown in the village, but the others claimed they were found at the market. Later, the first child brought in tomato plants, which were planted in earthen pots. The entire class tended the tomatoes and observed their growth, but unfortunately the meal was held before the tomatoes were ripe. They were therefore obliged to resort to the solution suggested by the other children : buying them on the market.

Another project was the preparation of a salad dressing : a number of receipts provided by families were experimented and tasted by the children, who chose the one they preferred. The tomato salad was then named "tomatoes in lime dressing".

The second group was in charge of the rice and fish dish. The women vendors who brought snacks to the school for the recreation period were questioned on how to prepare rice with fish. The children in the group made drawings of the different receipts as they were brought in. They then showed them to the other children, and the whole group compared the different receipts, and

decided that the basic ingredients would be those that were mentioned in all of the receipts. The fish itself raised a problem, since the women mentioned names of different fish (grouper, bass, Nile perch...). The children discovered the names of the fish sold at the market, made several visits to fishers returning from fishing expeditions and draw up a calendar of fish corresponding to the different seasons : fish caught during the dry, very dry, rainy and very rainy seasons.

The third group took care of the salad of fruit in season. This led to an investigation of tastes (acid, salted, sweet) in comparison with the tomato salad. The exact meaning of the words "fruit" and "salad" was determined. This led to the establishment of a number of classifications, and to reflection on time, the concepts of before, after, duration, passing time.

A survey was done in the restaurant, in families and among the children to determine the order in which dishes are served, and why the meal begins with a tomato salad and not with the fruit salad, for instance. The objective was not to impose an order, nor to make a value judgment, but to bring the children to understand that what is important is not the order but the variety of foods eaten, that sharing the same dish is a pleasure, and that it is more practical to serve the same thing to all guests.

The fourth group was in charge of the beverages ; that is, of the fruit cocktail and the bottles of water. The preparation of beverages taught much about fruit, and how to class them on the basis of a number of criteria (juicy or not, sweet, tart, bitter, with seeds or stone). A calendar was made for fruits. But most of the activities were centred around water : what water should be put in the bottle? What is mineral water? How can water be made drinkable?

The children learned to manipulate water in many ways, such as letting muddy water settle, making ice cubes then watching them melt, tasting water (hot water, cold water, salted, sweetened and dazzling water).

Preparing the dishes

Before the special meal, small amounts were made of each of the dishes and drinks, so that all of the children could decipher the receipts, prepare them themselves and taste what they had made. In addition to placing emphasis on cleanliness with respect to food preparation and on the prevention of accidents (the danger of fire, sharp utensils), these cooking activities were very helpful in developing notions relative to quantity. The approach to the latter was concerned with the integration of the notions themselves as well as with their application to food consumption (one tomato per person, one fruit per person, one glass of rice, one glass of fruit juice). The notions involved were simple ones (a spoonful, a glass, a little, a lot, less, as much as), linked to concrete experience. Never was there a question of grams or liters.

The receipts were drawn by the children, using these units of measure, for each table of five diners, but they were unable to cal-

culate the overall quantities of food required. The problems of hunger and fullness were brought up repeatedly, and questions were raised as to how to estimate them : how do you know that you have eaten enough? Why must we eat? Can you go without eating, without drinking? The children mentioned foods that they did not like and that their parents advised them to eat in order to grow tall and be strong. How do you know you are growing taller and heavier? Several children mentioned the weighing sessions at the MCH unit, to which babies are taken by their mothers. A visit was organized, and was followed by sessions at which the children were weighed and their height measured. The children compared their weight, two by two, on the seesaw-scale (the heavier child goes down and the lighter one goes up). They compared their height by making marks on a wall. One after the other, the children stood against a wall (with head, back, calves and heels touching the wall), a book was placed on their head as a gauge, and used to mark the top of each child's head on the wall. Comparisons did not stop at weight and height, but included the length of arms and legs as well as of hands and feet.

Hands and feet yielded opportunities to study many things. Each child studied his or her own hands and feet. The children then compared their hands and feet, placing them palm to palm, and sole to sole. Footprints and handprints were then taken, in potter's clay, then by leaving clay prints on paper, and last, by drawing the contours of the hands and feet. Drawings of hands and feet were then used to decorate the restaurant.

In addition to furthering the concept of growth, these activities contributed to the acquisition of mathematical concepts (height, weight, length) (more, less, as much as), and of symetry, orientation in space (left, right, top, bottom), familiarity with the bodily scheme and structuring of space and time. As for units of measure, the children heard the terms of metres and centimetres. They learned that there are many centimetres in a metre, that a centimetre is smaller than a metre. They found out how much they weigh and measure, but these notions were not explored in detail or in depth.

Organization of the festivities

Different projects were elaborated for the restaurant's menu, as well as for invitation cards. Those children who were able to copy a text wrote the menu, while the others made drawings or collages of it. Each child made a menu for his or her table, and two invitation cards with a part to be returned, for planning the amount of food. A last-minute problem arose when a mother announced that she would bring her newborn baby to the party. What should the baby be fed? This incident elicited a meeting on breast-feeding, with the participation of the mother, who was asked questions prepared in advance.

Music was to be played during the meal. The children made an inventory of the different types of music they knew.

Once all of these details were taken care of, the project ended with the festive meal. It was partially prepared by the mothers,

who made the rice and fish (rice with Nile perch), while the children participated in washing the tomatoes, arranging them on dishes (sliced or quartered, as they had learned to draw them and to prepare them, in manual work) and in preparing the fruit salad and the fruit juice cocktail.

Educational material

The most thoroughly exploited educational material was the environment (the restaurant, its staff, the market and its vendors, the fishermen, natural and recycled material) and the locally produced food. However, since one of the educational objectives was to help children detach themselves from concrete examples and to develop their ability to symbolize, a set of pictures (1) was used. The latter deals with food and diet and growth, and served as a go-between between reality and the children's representations. It gave rise to language activities, to games, especially mathematical games (classifications, sorting things on the basis of one or several shared criteria, one-to-one correspondence...), to creations and reproductions of receipts for dishes, some edible some inedible. Although it is relatively complete, the set did not contain all of the pictures the children desired, so they enriched it with drawings and photos showing the different varieties of fish found in their locality, as well as certain dishes.

EVALUATION

Evaluation dealt with actual achievement of the project (organization of a restaurant day), the teacher, the children, the families and the community. The assessment was positive, on the whole, inasmuch as the meal took place, interested the children, generated the approval and participation of families and of some community members.

The teacher

The main difficulties encountered by the teacher were in coordinating all of the objectives simultaneously : those involving the children's development and their education for nutrition, those relative to the progression of the project and to its materialization despite the shortage of material means, and last, those involving parental and community participation.

The children

The objective of sensitizing children to their diet was attained, since they took interest in different activities ranging from studies of fish to learning to cook, and including a better cognizance of breast-feeding. In addition to the subjects suggested by the teacher, the children asked innumerable questions about food, where it comes from and how it is prepared, according to parents. They also mentioned the children's desire to participate in preparing meals. Further, the teacher noted their difficulties and their progress in fine and general motor skills, language, socialization, problem-solving ability and capacity to act autonomously. They learned to work in independent groups for the implementation of a shared project. Much sharing was required so that they could be kept informed of the advancement of the different groups, and not lose sight of the ultimate objective : the restaurant day.

(1) Cf Technical note : "Pictures for eating", ICC, Paris.

Parents and the community

Parents became involved in the project : some participated very actively, others with less time simply were cooperative, but no-one was indifferent or opposed to it. Work with parents made it possible to broach other subjects such as children's education in general, monitoring of their health, school guidance for older children, preschool education and school learning, and weaning. Older brothers and sisters also participated in the project, sometimes representing their parents, or the school. They took an active part in conducting investigations. Tradespeople, craftspeople and fishermen gave the children a kind reception. They were interested in the children's school activities, amazed by their curiosity and their ease of expression. They were glad to see that the school took interest in their work, through the children, and proud that they too had "knowledge" to communicate. They had been contacted by the teacher before each visit, so as to determine when they were free, and what the children should be shown, that they could understand.

The doctor at the health centre and one nurse, in conjuncion with the parents, helped the teacher determine the overall objective of education for nutrition, on the basis of the problems most often encountered locally. They also participated in the elaboration of specific objectives, and facilitated the organization of weighing sessions. They explained the importance of monitoring growth to parents, and taught them to read the weight and height charts.

Through this activity, it may be seen that there is no difference between education for nutrition and education in general, or the development of children's potential. It is an integral part of these, just as it is a part of their everyday life. Children are spontaneously interested in what they eat, which leads them to express themselves, to act and to experiment ; this brings them to acquire language, motor and cognitive skills.

This programme was run in West Africa with five-to-six year-old children. It may be run along the same lines in any other country, and even with slightly older children, provided the activities are adjusted accordingly. The intellectual concepts used should neither discourage them nor leave them unsatisfied, but should always be a factor of progress. For instance, the mathematical activities used with small children include many manipulations and few written or graphic representations. They experience the mathematical concepts through the objects surrounding them. Later on in their elementary or advanced schooling they will learn to solve problems through reasoning and the manipulation of figures. In the case of small children, the question is how many tomatoes are needed for the number of diners, given that they must have one tomato each. At a higher level of abstraction, this exercise may be done with representations (pictures, drawings, photos). In elementary school, children may calculate the weight or the number of piles to buy, knowing that tomatoes are sold by the kilo or by piles of 5 or 6. This is a way of studying weight-related concepts, the rule of three and numeration based on 5's or 6's.

All mathematical concepts, skills relative to mastering reading and writing, as well as the rules presiding over social life may be comprehended through food-related activities, although other subjects that interest children or are necessary for their education should not be eliminated.

The participation of parents, families and the community plays a major role in children's education. For those who are lucky enough to attend it, school is not the only place where they find knowledge and fashion their behaviour, their image of the world, of the occurrences, people and objects around them. Education for nutrition and health must be begun as soon as possible, so as to help children work out an explanatory system of which what they learn at school is an integral part, and which enables them to develop the most healthful behaviour possible.

Environmentally-appropriate education for nutrition and health of both parents and children is a natural education through which children are integrated in their environment and in their culture. It is an art of living, and at the same time it makes basic school acquisitions meaningful. The fact that this is a functional education facilitates its promotion in those settings where schooling is not valued. By opening itself to the community, it brings school closer to people, and generates interest in it. It also contributes to an understanding of families, their concerns and their views. It makes for a better adjustment of action to children's needs, while responding to parents' expectations. It avoids the creation of conflictual situations between children and their family.

TECHNICAL NOTE - "PICTURES FOR EATING"

What is hiding behind these words?

A box of 170 coloured pictures, painted on cardboard and inspired by slides made in Africa during field work, on the themes of food and diet, growth and monitoring of growth.

A set of pictures to be used with children between the ages of two-to-three and nine-to-ten, which may serve in a multitude of games and activities : children thus enhance their perceptual and intellectual abilities and gain some practical knowledge in the field of diet and health without realizing it.

This is an invaluable educational tool, tested in Benin, Guinea and Mali, for use by educators and parents, composed of small pictures - 12 by 17 cm - (pictures B1-B2), which are simple sequential views of increasing complexity, and of large pictures - 17 by 24 cm - (X15 pictures), plus an explanatory booklet in French (1).

Why choose pictures?

Of all medias, pictures on paper are the easiest to use, since they do not require any source of energy, any special machinery, or the learning of complicated manoeuvres. They are naturally attractive for children, and fascinate them, excite their curiosity and questions. They are a means of learning and a source of knowledge.

Pictures, sets of pictures, education for nutrition

In itself, the use of an educational tool such as a set of pictures does not teach children the basics of appropriate dietary behaviour. Education for nutrition is an integral part of education and of life. It partakes of everything in any way related to eating : farming production, animal husbandry, cooking, sale of food, work, conviviality. It is involved with eating in the everyday life of the family and of children, including in what is learned at school.

The first phase of education for nutrition takes place in the contact with human beings, animals, nature, objects, and of course food. To be capable of recognizing pictures, one must have seen the reality shown in them. Recognizing a picture and recognizing an animal through its picture are two different things. Children who have never seen a hen and who are shown a picture of a hen may think it is a toy or something completely different. Once told it is an animal, they compare it with the animals they already know. The hen may be imagined to be as large as a cow, if the two are of the same size in the pictures.

To be aware of all aspects of the animal, it is equally important to see a real hen, touch it, feed it, hear it cackle, avoid being nipped, collect its eggs. A food is not reducible to its picture : it is a whole composed of sensations which may be extremely subtle. It is recognized by taste, smell, colour, consistency, touch and the sounds it makes. Food is associated with particular living experiences, and with the people with whom it is eaten. It is a mark of time (the snack at recreation, the Christmas turkey, the Tabaski mutton), of age (milk for babies, porridge for weaning, reputedly

(1) see pictures in centerfold.

adult food), of certain people (mother's cooking), of places (fish from the river, a regional specialty), of social events (festive meals), of belonging to a society. It must be experienced if its representations are to be significant.

All of the activities done as play, individually or in small groups, should have educational objectives, and contribute to children's development in all areas : communication and expression, creativity, reasoning, ability to handle codes, orientation in space and time.

At first, children should be given a small number of pictures pertaining to their personal experience, and be allowed to look at them freely. They must be taught to find the top and bottom.

Some activities : food and diet

The small pictures show plants and food of plant origin, animals and food of animal origin, the utensils required for the preparation of food and prepared dishes such as rice and fish. Some may be placed in sequential order showing the course followed by food : for example, the roasting ear of maize is the third picture (picture D3) of a series beginning with a maize shoot, followed by a plant with ears of maize.

The larger pictures are more complex. They illustrate the growing, preparation, storage and marketing of food, such as the sale of vegetables at the marketplace (picture X15).

In this time of advertising, comic strips and television, education about pictures is essential. To decipher a picture or a series of pictures, one must discover the graphic code used to represent reality. This code is composed of lines, coloured surfaces, colours and shapes, interacting so as to create the illusion that they are real, within a limited space (the surface underlying the picture) and with a top and a bottom. Its interpretation involves perception and mental representation. Pictures have an immediate evocative power. They are "like" what they represent, but cannot be confused with reality. They have the shape, sometimes the colour, but eliminate some part of reality (the dimensions, volume, weight, smell, movement, life). Children's personal experience and ability to represent things enable them to reconstruct that reality mentally, using visual indications. In this way pictures help children to detach themselves from the concrete, to develop their symbolic thought process and to reach a greater degree of abstraction.

Reading pictures prepares children to read writing. It is an intermediate phase, in that pictures are less abstract than words, be they spoken, written or read.

Pictures showing commonplace fruit, vegetables, animals or objects may be shown to toddlers even before they are able to speak. Toward 18 months to 2 years they understand a number of words and when shown a small number of pictures, are able to designate the one corresponding to the word pronounced : where is the tomato? the sheep? They also enjoy being told what the pictures show. When children begin to speak, they play at naming the pictures, and as they learn more they are able to name the

colours, shapes, and everything suggested to them by the pictures. Later, the sequential pictures and the large ones contribute to the development of more elaborate speech, of sentences that fit together, with prepositions, verbs and adjectives.

The game leader (a child or an adult) selects a picture at random and must help the group to discover what is shown on the picture. This game may take different forms, depending on the age of the players. Some small children may attempt to recognize an animal by the sound it makes, a fruit or a food-related activity by mimicking movements, or by an oral description, or again by asking questions to discover indications that help them to determine the picture, the sequence, or even the dish.

Another type of game involves having a blindfolded child guess which pictures are being described, using perception of a smell, a taste, a shape or a volume.

A picture may be used as a starting point for a story, such as "once upon a time, there was a red hen..." and the children then continue it.

For a picture such as the one showing a marketplace (X15), five children play at being the people in the picture, and engage in conversation. If the children are short of ideas, the game leader begins, asking "where do these tomatoes come from and how much do they cost?", for instance.

The set only contains 170 pictures. The children may complete it by drawing fruit, vegetables, animals or dishes eaten locally, or by adding or changing the pictures in the suggested sequences.

As an exercise in graphics based on the simple pictures, the children may make a tracing or reproduce the shape of an ear of maize, for example. They then draw another ear, almost identical but slightly smaller, inside that ear, following its shape. They continue, drawing a third ear inside the second one, and go on until the ear is full of increasingly smaller ones. Going in the other direction, they go around the outside of the ear, drawing a slightly larger one, then another even larger one, until there is no room left.

The sequential pictures are appropriate for this exercise, since each one is located before or after another picture in a temporal logic. The pictures showing the hen, the egg and the chick may be placed in different orders, each constituting a logical sequence. The pictures are placed in a predefined direction, corresponding to writing and reading : from left to right, from right to left or from top to bottom, as the case may be.

The manipulation of pictures is a step on the road to access to reading and writing. Children must first be helped to associate pictures and writing, then later they are able to eliminate the picture : writing in itself suffices to evoke objects, people, actors.

Pictures are easy-to-handle two-dimensional objects representing symbols. They make it possible to perform concrete actions which will later be replaced by mental operations : for example, reaso-

ning with concrete objects before one is able to do so mentally, using figures.

Children are able to sort out and class pictures on the basis of one or several criteria, including colour, shape, origin, weight, taste, type of consumption, cost ; this requires that they use reasoning and logic.

These criteria may be grouped by 2 or 3, to achieve increasingly subtle classifications, such as the group of pictures of round, yellow foods that are eaten cooked. These classifications are the basis for writing exercises such as the preparation of diagrams or of two-column tables :

Fruit and vegetables	wash before eating	wash and peel	peel
banana			x
mango		x	
papaya		x	
tomato	x		
cucumber		x	

or again :

food eaten	Monday to	Sunday
plant origin		
animal origin		

food eaten	Monday to	Sunday
fruit vegetables cereal grains fish meat		

Other sorting games may be invented, such as finding those small pictures that correspond to things found on the large picture showing the sale of poultry or of fruit and vegetables.

Presentation of a receipt.

picture of a tomato	beans	meat	salt	onion
3 tomatoes	3 glasses	1 piece	1 pinch	4

The amounts are written differently depending on the children's age : drawing of 3 tomatoes, writing of the figure 3, of 3 sticks or of the word three.

Growth

Pictures on this theme deal with the growth of plants (from the shoot to the ear of maize), of animals (from the egg to the hen) and of course of children. Children's growth is shown through the phases from a pregnant woman, to a baby and then the changes in posture and in autonomy (child carried on back, child walking alone).

Changes in diet (from breast-feeding to adult food), in teeth (first teeth, loss of milk teeth, definitive teeth). Pictures of scales, scenes of weighing as well as of weight and height charts indicate monitoring of growth.

The children put the pictures of the hen, the egg, the chick and another hen in order, to tell the story of the hen from birth on. They create a parallel between the story of the hen's birth and the child's birth, telling what is similar and what is different.

Five types of scales are shown (a jeweler's scale, a spring-balance, a baby scale, a Roberval scale and a clinic scale). The children have already seen them, and must associate each of them with a picture showing an animal, a plant, a food or a child that may be weighed on it.

The weight curve of each child may be drawn, with the help of the picture showing a weight chart.

Children class pictures by size of the object : for instance, a carrot plant, a maize plant, a mango tree.

To purchase this set of pictures, write to the International Children's Centre. The price is 350 FF (60 US$) + postage. A reduced price is offered for bulk orders.

APPENDIX 1 - STUDY OF THE LOCAL ENVIRONMENT

A grid for studying the local environment and local living conditions

1. Notes on the general context
- Geography, climate, topography
- History of the area
- Types of housing
- Roadways and means of communication

2. Demographic aspect
- Number of inhabitants and age pyramid
- Demographic data : birth, fertility, mortality rates, etc.
- Ethnic groups
- Population movements

3. Socioeconomic situation
- Social and economic levels
- Occupational activities
- Employment situation
- Cost of living and utilisation of income

4. Administrative and political organization
- National health, social and educational policies
- Structures for planning, decision-making and implementation
- Personnel training policy
- Means of informing the population

5. Social organization
- Role of the family, of women and of various members of the community
- Organized groups (clubs, unions, etc)
- Networks of personal relations
- Underprivileged groups

6. Cultural situation
- Schooling and literacy within population groups
- Educational and religious systems
- Traditions, customs and behaviour with respect to health, reproduction, disease, death and food

7. Health and social structures
- Services : objectives, facilities, accessibility, use and coverage
- Staffing : number, distribution, training, refresher training and supervision
- Traditional and western medicine

8. Health and nutritional status
- Health statistics : disease rate, vaccinal coverage, birth weight, etc.
- At-risk groups and risk factors
- Evaluation of health and nutritional status. Relations between food consumption, budget and nutritional status.

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Innumerable nutrition education programmes have been launched around the world in the last twenty or thirty years ! How effective have they been ? In their first chapter, the authors do some self-questioning, then review some of the main causes that may explain why past achievements have been so meagre.

On the basis of their experience, they discuss some phases to be given priority in the strategy of nutrition education. Special emphasis is placed on analysis of the dietary situation and knowledge of available resources, of behavioural and consumption patterns, of the nutritional status of individuals and of the community, all of these efforts being conducted in close cooperation between families and professionals in a number of disciplines, before they reach the stage of planning and implementation of concrete activities.

Programmes for enhancing children's awareness of nutrition are also described, including one programme based on an original educational tool, a picture set on food, diet and growth, for children aged 3 to 9.

NUTRITION EDUCATION

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